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ON

THE REV. JOHN WARD AND MEDICINE.

Being the Annual Oration of the Medical Society of London, delivered on May 10th, 1920,

BY SIR D'ARCY POWER, K.B.E., F.R.C.S. ENG., F.S.A.,

SURGEON AND LECTURER ON SURGERY, ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—In a previous address[1] I gave some account of the Rev. John Ward, A.M., vicar of Stratford-on-Avon, whose commonplace books have long been amongst our treasured possessions.

I propose to-day to consider his medical knowledge—as he reveals himself to us—in somewhat greater detail. Even in his early days, when he was a resident Master of Arts at Christ Church, Oxford, he had a strong bias towards "natural science," as we should now call it—a bias which was strengthened by the original work of Willis, Lower, Wren, Bathurst, Boyle, and Hooke, whose names are household words to the modern student of anatomy, physiology, chemistry, and physics.

At the Restoration, when those who had become inured to the rule of the Commonwealth found themselves somewhat out of harmony with the Royalists, Ward, like many others, determined to leave Oxford, and, having a competence, debated for some time whether he should become a divine or a physician. He visited London repeatedly in the year 1661-1662, and attended the lectures of Sir Charles Scarborough at the Barber Surgeons' Hall in Monkwell-street; visited St. Thomas's and St. Bartholomew's Hospitals, and made inquiries about the cost of foreign medical degrees. Botany[2] and chemistry as the foundations of medicine greatly interested him, but the call of the Church prevailed. He bought himself the Vicarage of Stratford-on-Avon, and remained there till his death in 1681. The bodies of his parishioners—dead as well as living—and especially their urines, interested him much more than their spiritual state, and where one page of his diary is devoted to texts, sermons, and theology, there are 20 dealing with medical topics. Like many medical students of the present day he loved a prescription, and he eagerly noted down the formulæ which he had heard or seen used by an eminent physician. Willis was facile princeps in his estimation, partly because Ward had known him at Oxford, partly because Willis was just acquiring a good practice and was called into consultation in the more serious cases which occurred amongst Ward's parishioners and neighbours.

Ward himself was like Boyle and Pepys, versatile and curious, a type of mind not uncommon amongst men of his generation. He wished to know all that could be known about everything he saw. If he went to a goldbeater's shop he desired to know exactly the processes used and the weight and thickness of the products; the pursuit of the Philosopher's Stone interested him greatly, not because he had any belief in the transmutation of metals, but because it led to chemical processes and was in the nature of experimentation. In this respect he was a true disciple of Boyle—the author of the Sceptical Chemist—for all things were put to the test of experiment. "Don't think, try," was the watchword of the Oxford School of Science long before it was adopted by John Hunter, and in this school Ward was educated. Fortunately for us he had a bad memory and therefore committed his thoughts to paper; we are thus enabled to follow their train. In the long winter evenings he read much, and it was his habit to make a digest or running commentary upon what he read. Riverius, Fuller's Worthies of England, Velthusius, Willis's De Cerebri Anatome, Lower, Boyle in all his works, and Highmore were his constant companions, and throughout the period under consideration—1660 to 1668—he must have given a standing order to his bookseller in Oxford to send him, not only the new books on science as they appeared, but even the new editions. He must, indeed, have been in possession of a very good library.

There is no doubt that he prescribed for and treated his parishioners of the humbler ranks, although there was an apothecary and at least one physician living in Stratford during his incumbency. He considered it a part of his parochial duty and the services he rendered were gratuitous. Such treatment of the poor by the parson of the parish does not seem to have been unusual, for he says:—

"Watson, Parson of Sutton Coldfield in Staffordshire hath an extraordinarie way of cureing dropsies by ye help of pills and a dyet-drink. Hee hath likewise a kind of Unguent made, as I suppose, of Tarre and ye basting of a shoulder of mutton and of soot (as they tell mee) or some such thing and this cures any sore presently."

This was clearly a crude form of Unguentum Picis.

From time to time, too, he did a little minor surgery, and he has a good surgical aphorism: "Allways lay a wound open whether it bee fresh or ulcerated." He says:—

"Remember to get a speculum oris and other instruments fit for chirurgerie when I goe to London and a great case to hold them."

There is a note:—

"Issues made in children's necks att 2 days old, good against convulsion fitts. Remember to cut ym with my owne hand and frequently to let blood with my owne hand. In making Issues use a green pea to draw, Ivie peas made of Gentian Roots; peas made of Hermodactyl as I have heard." "Remember in Agues and ffeavors 1st. to bleed and then to giue my powder and plaisters to break ye neck of ye disease afterwards."

He was observant of cases as they came under his notice and seems to have had some idea of the metastasis of cancer, for he writes:—

"Persons yt haue Cancers after a while haue glandules arising in other parts, wch may infect further, although ye other should be taken out."

CONTEMPORARY METHODS OF TREATMENT.

The contemporary methods of treatment can be gathered from various entries. Thus, of pleurisy with effusion, Ward writes:—

"When an incision is to be made into ye Breast open itt betwixt ye 3rd. and 4th. true ribb reckoning upwards, yt is just aboue ye diaphragm and to yt purpose apply a Caustick wch is very strong and will eat through ye Muscle; yn make an Incision and keep itt open with Tents. This course was taken with one who had an hydrops pectoris and itt evacuated much water but at last itt ulcerated and ye man died." "A Caustick if well made in two hours does ye buisnes." "That person yt had a hydrops pectoris with laying one hand uppon his breasts and another upon his back and shaking him, ye water swashed so about yt those that were by heard it plainly."

The treatment of lunatics was drastic.

"A good course for mad people (is) to bleed att both armes and att both feet and yn att ye haemorrhoids by Leeches; yn att ye Veine of ye forehead and tongue and nose and att ye temporal artery. Extract of Hellibor gr. x. once in 4 or 5 days very good for madness proceeding from melancholia. Many mad persons not cured till 60 times bleeding."

Hysteria seems to have been a common and troublesome condition then as now. Dr. Willis and Dr. Highmore both wrote on the subject and Ward makes repeated reference to them. The cause was none the less mysterious because it was supposed to bear a relation to "the rising of the mother," the deeply ingrained idea that the uterus was an animal with an independent existence and capable of independent movement in the body. Ward says of the cause of hysteria—

"Enquire whether histerical fitts may not be caused by ye wombe rising uppon an object which is beloved and likewise from wind; so ye erection of ye yard may proceed from a wind distending itt, wch wee call a satyriasis. Histerical fits are of seueral kinds some voluntarie as in (1) erect; virg; (2) some proceeding from wind; (3) some from ye suffering of ye matrix, either by emptying of a great Burden as after child-bearing or by doing itt wrong in wounding itt in bringing forth ye child; (4) or by fumes elevated; remember to peruse Dr. Highmore on this subject."

Highmore, a friend of Harvey, is still known to us by the antrum of Highmore. He wrote a small 12mo. published at Oxford in 1660, with the title "Exercitationes duae ..... De Passione Hysterica." Ward evidently looked at the book, for on page 4 is "Sternutatio si superveniat cito paroxysmum claudit," and a few pages further on Ward asks himself—

"Whether itt is not very proper to cause histerical women to sneeze by putting up Orange pill [peel] into their noses or some other way."

There was also—

"Aq. Histeric. and Cinnamomi for women in laboure or neer fainting fits. Whether fits of ye Mother are anything else besids a meer ventositie of ye wombe."

[1] THE LANCET, 1916, ii., 665.

[2] The Annals of Medical History, vol. ii., 1919, p. 109.

The treatment differed with different practitioners; thus—

"Dr. Trig cured a woman yt was troubled with histerical fitts this way; he laid her uppon ye ground with her face downwards yn took up her coat and gaue her 3 or 4 good slaps on ye arse and they cured her, but I was informed yt he did this before much companie, which I scarcely believe."

"Dr. Willis used with histerical women this method;—1st. vomited ym; next gaue ym pills and cured several."

EPIDEMICS IN THE SEVENTEENTH CENTURY.

Small-pox, measles, and the plague appear to have been the chief epidemics from which the Stratford people suffered. Tubercle was rife as always; ague was endemic, as the Avon is liable to flood extensively and there are plenty of midges.

The new disease.—The following note was made in February, 1660:—

"Dr. Eliot sayd hee did obserue yt in some persons who died in ye late new disease yt their faces were very red, their eyes much blood shot, whence hee concluded they would die but before death they would spit blood and pisse blood; and accordingly itt fell out."

Small-pox.—There were several outbreaks of small-pox at Stratford between 1660 and 1666, for the disease was always present before the age of vaccination. It was looked upon as a disease which occurred in the ordinary course of events, and many of the professional beauties of Charles's Court owed their reputation to the fact that they were not pock-marked. Ward notes in January, 1665–1666:—

"Ye small-pox this year are less yn usuall as hath been observd by diverse: whence that may proceed?"

He writes almost directly afterwards:—

"R Aq. Theriacal. with Syrupe of Gylliflowers to bee giuen in ye Smallpox when they first come out. The smalpox this yeer haue skaled and yn Risen down againe." "It is an ordinarie thing to haue convulsions goe before ye Eruption of ye smallpox as in Mr. Taylor's Sonne, Mr. Tent's Boy; Remember to obserue itt." "Vomiting a usual signe of ye smalpox, if itt precedes as in David att Mr. Jhonston's." "The Small Pox this year doe ordinairily Rise twice. Some new ones come out after ye others are allmost Ripe as in Mris Townsend; Mris Watts and Seuerall others; yet I haue not obserued any to die of them uppon whom they haue so Come out; whether Nature's disburthening ittself after that manner (Partibus vicibus) does not make itt more safe, whereas were ye eruptions all together itt might be more oppressive to Nature and consequently more daungerous."

"In ye yeer 1664 ye smallpox raged very much att Stratford-uppon-Avon; some they came out twice uppon; others they neuer fully came out at all, only appeared a little and went in againe and left a kinde of scruf on ye face. I suppose ye alteration was accounted to ye masse of blood. I think they appear as soon in Whurtles uppon ye face as any where; especially on ye cheek." "I haue observd yt people that haue had ye smallpox are more difficult to sweat yn others, whether itt bee yt ye pores are straightened by ye pox so yt they cannot so well come forth. I mean such persons some 3 or 4 years or more after ye smalpox sweat not so kindly as others who neuer had them."

Chicken-pox.—The difficulty of diagnosing between small-pox and severe chicken-pox did not escape Ward, for he said:—

"Obserue ye Chrystals what they are and how differing from ye smallpox and Measles and obserue somewhat about ye (origin (?)) of ye pox and other things about itt."

Measles.—It is somewhat remarkable that no thought of contagion entered into Ward's mind in connexion with small-pox and measles. The plague he knew was catching, but measles and small-pox he believed to be climatic or, at any rate, seasonal in origin.

"The measils a general disease in 1661 yet not much mortal: yt yeer was a cool spring and an exceeding hot Summer." "I obserued one yeer in Stratford after a cold winter, a cool spring and a very hot summer children had ye measels extremely and men about July had Agues and feavors in abumdance." "The Children after ye measils were gone had violent griping pains and skreking in their gutts with starting and frightful fitts." "In ye measils a little before they came out children had strange fits, very frightful and like convulsions so in ye small-pox." "After ye measils some had great paines in their bellies with wormes coming from them." "After ye measils went in people were strangely disordered, some with coughs, some with headache, some with one thing, some with another as doubtles in those diseases much of ye matter is left behind."

Diphtheria (?)—He also gives a note of a case which seems to have been diphtheria, for he says:—

"Whether ye woman, I think of Luddington, who had her tongue so swelled did not die of a Thrush or ye Aphthae, which are, whether in ye Roof of ye mouth and sometimes black ones, exceeding daungerous." "There were seuerall persons this last plague yt had itt in their throats, whereof many died yet some recouered."

The plague, 1665.

"Some in ye plague had 3 or 4 sores all att one time uppon them in this last plague." "When ye sicknes was declining one might obserue persons in London streets halting and holding their arms very strangely wch persons they concluded to haue ye sores uppon them. Dr. Wharton said all people yt died in ye Contagion died of ye plague; yt hee opened one yt had no tokens nor sores, yet was full of tokens about ye Breasts. When ye Tokens only appear and not a Bubo itt is less infectious." "The Plague ordinarily begins with vomiting; There are in itt Buboes yt appear in ye Emunctories; Carbuncles wch come anywhere; ye Blanes wch are things like blisters; and ye tokens wch are spots of bright flaming red colour: inquire of Dr. Hodges."

"In every Parish in London there are 2 watchers so yt what euer disease a man dies of these 2 must see and signifie ere ye partie bee buried. They are commonly two old women and they haue 4d. or 6d. for their paines; so an apothecarie in London told mee."

"Towards August in ye yeer 1668, when we had a strange winter, a strange forward Spring and a strange moist summer, men had frequent swellings about ye throat; pains of ye teeth and such like distempers."

VALENTINE GREATRAKES, THE "STROKER."

Ward gives some interesting facts about Valentine Greatrakes, the celebrated "stroker," or, as we should now call him, the Christian Scientist. Born in Ireland in 1629, and living until 1683, he was in the height of his fame when Ward's entries are made—no doubt from personal observation—in 1666. The Lady Anne Conway, to whom reference is made, was a metaphysician, the wife of Edward Conway and the daughter of Sir Heneage Finch, Recorder of London and Speaker of the House of Commons. After her marriage in 1651 she lived at Ragley, still the seat of the Marquis of Hertford, whose second son bears the title of Baron Conway. Van Helmont, her physician, was in constant attendance, as she suffered continually from severe headache, later associated with fits. In spite of this affliction Lady Anne wrote much and was thought to be one of the most accomplished women of her generation. Greatrakes, who had cured a great number of people in Ireland gratuitously by stroking the part affected, was summoned to Ragley in January, 1666. He was unsuccessful in curing Lady Anne, but during his three weeks' stay he relieved so many persons in the neighbourhood that Dr. Stubbes, the physician at Stratford-on-Avon, published a 4to volume at Oxford in February, 1666, with the title "The Miraculous Conformist." A counterblast was issued by David Lloyd entitled "Wonders no Miracles."

When Greatrakes failed to cure Lady Anne Conway she went to Paris in the hope of being trephined, but the courage of the French surgeons failed them and she returned to England unrelieved. She died in 1679.

Ward's allusions to Greatrakes and Lady Anne Conway will be readily understood in the light of these facts. He says: "The Lady Conway hath great pain in her head, her sutures open." This entry suggests that she may have been suffering from the form of chronic hydrocephalus associated with closure of the foramen of Magendie. In such cases, as my friend Mr. L. B. Rawling reminds me, the intellectual faculties are often increased. If this were so, the French surgeons were perhaps to blame for not having operated.

"Ye Lady Conway hath something like ye Irish ague. Shee is a great phylosopher. Henry Moore of Cambridge allmost perpetually with her in her chamber."

This was Henry Moore whose uncle threatened to thrash him before he went to Eton at the age of 14 "for his immature fondness in philosophising concerning the mysteries of necessity and free-will." He had a high opinion of Lady Anne Conway, whom he used to call his "heroine pupil."

Ward heard—

"yt ye Ladie Conway is Sir Heneage ffinch, his eldest sister and a right ffinch—very proud. Yt she came into this miserie by a Brother of hers who had some skill in physick and Chymisterie and tried experiments uppon her; inquire whether itt was not ye same man yt travelled with Jeremy Clark." "My Lady Conway hath a tumour on one side and a scirrhus of ye Mesenterie as is supposed, as Mr. Stubbs says."

Ward had no high opinion of the veracity or methods of Dr. Stubbes, for he says:—

"Inquire who yt is wch hath wrote a Book of Mr. Gretorixes his Cures wch is about as bigge againe as Mr. Stubbes on yt subject then peruse itt making to my own thoughts some censures uppon itt." "An issue made in ye side betwixt 2 Ribbs for a consumption by Mr. Stubbs, a conceipt sufficient. Some yt made issues under ye Axilla, as Mr. Stubbs said (if it bee not a loud lye) as also Dr. Bathurst's opinion of an issue yt itt gives a vent to nature as hee illustrated in a Barrell wch when it hath vent, and yt ye eating of an onion or any such thing is discernible in ye issue. Hee talked of an extreme ebullition of water in ye Breast wch may Cause a Cough—a loud lye—and moreouer yt hee hath tapt an hydropick person and there hath water come out of his bellie wch skalded ye hands—a loud one. His pretense of understanding ye distinction of feavours and of fluxes together with his rambling discourse of unusuall authors."

Ward had clearly formed an unfavourable impression of Dr. Stubbes, whose cloudiness of thought had probably led him to write the pamphlet, alluded to above, in favour of Greatrakes's cure. The methods of treatment recommended for Lady Anne Conway are probably the instructions given by Dr. Willis:—

"First purge per ἐπίκρασιν; yn Bath her feet well; shave her head and apply to itt ye Lungues of sheep warme, new taken out of their bodie." "My Lady Conway took much of his (Dr. Willis's) ens Veneris and is much worse since ye taking of yt Hues his powder."

There are a few more references to Valentine Greatrakes, thus:—

"The way to cure a deaf ear taken by a Barber at Thrapstone;—first syringe ye ear well; yn drop in 3 drops of oil, I suppose itt was sallet oil, into ye ear; doe this 3 or 4 times and ye end of doing itt is to loosen ye matter wch stops ye ear; wch after by often syringing comes out; sometimes a skinne, some times ear-wax as bigge as one's finger-end; ye oil is either common sallet-oil or else some oiley infusion as appeard by ye smell. I think such a method safe and good praemising first purging and Mr. Greatrakes his Method to break ye Aposteme by shaking ye ear by putting ye finger into itt besids thus loosing ye ear-wax as I thinke. Deafness is either natural or else itt is catcht by sweating or after a feavour. Keeping ye head too warme a great cause of deafnes, said Mr. Gratrack; hence, said hee, there are 10 women deaf for one man and amongst women many countrie women for one Gentlewoman."

This is evidence, I think, that the Irish used the shawl as a head covering and the Warwickshire women wore cotton bonnets as they still do.

"Mr. Getorix in curing a deaf ear used to lay his ear to ye parties and then thrust his finger yn and so brak ye Aposteme, but ye end of laying his ear to itt seemd to bee this to hear ye sweging of ye Aposteme."

This, however, was a faulty deduction on Ward's part, for the Stroker used a certain amount of mystery, and used to whisper in the patient's ear, "God Almighty heal ye for His mercy's sake."

CERTAIN CASES DESCRIBED.

Ward gives sufficient details of the illnesses of some of his neighbours and parishioners to enable a diagnosis to be made, though in other cases the nature of the disease is puzzling.

Dilated stomach.—The following appears to be a case of dilated stomach:—

"My Lord of Down yt. now livs at Roxall, euery night vomits after his first sleep and to yt. purpose hath 2 chamberpots allways by him, one to pisse in and another to vomit in."

Enlarged prostate.—There is little doubt that the following was a case of enlarged prostate:—

"Dr. Gordon, Bishop of Exeter and lastly of Worcester died of a stoppage of the urine, wch was supposed to bee ye stone, wch was by a probe often before opened but after being opened no stone appeared but only 2 peices of flesh growing one against another in ye neck of ye bladder yt ye urine could not passe. This was strange yet true."

Hay fever.—The next case was one of hay fever.

"A strange sneezing wch Mr. Cary of Nobal was troubled with, hee would sneeze 2 or 300 times together, but as soon as ye first frost came itt would leave him in ye winter, yn come againe in Summer with extreme Vehemency, afterwards hee fell into a quartan Ague and an intollerable head ache, with a vomiting allmost all he took, wch might be caused by a metastasis of ye sharp humour from one part of ye braine to some other part."

I would suggest that his accessory sinuses became infected and that "the quartan ague" was evidence of suppuration.

Hydatids of lung (?)

"Mylward beyond ye Bridge (i.e., Clopton Bridge at Stratford on Avon) brought mee ye bagge of an Imposthume wch came from her Daughter or Neece, ye thickest that euer I saw; ye wench felt it long under her left Breast and itt bled and trickled very warme, as shee thought; but about 9 days agoe ceased. This morning shee was taken with a Reatching and att last up comes a quart of blood and after yt ye Bagge wch Mris. Tyler caught hold of and brought up—very thick."

"The question is whether itt comes from her Breast or not or whence itt should come. It is probable a Vein was opened in her Breast by strayning herself to take up a payl and so ye mater collected and Imposthumated."

If I had to guess about the nature of this case I should hazard that it was an hydatid cyst, "the quart of blood" being blood-stained hydatid fluid, or else that the wench was hysterical and had produced a pig's bladder filled with blood.

Other cases.

"A Wench, January 28 (1663-4) vomited up blood, her name was Myllen, beyond ye Bridge; wee gaue her some opening pills, supposing it might bee her terms wch might flow yt waye."

"Another wench at Alderminster wch after heating herself and drinking sate downe to weed in ye Garden and was taken with such a paine in her joints yt shee could not stirre; she was likewise much swelled. Shee was a very fat wench before."

"Make some obseruations of Mr. ffrauncis Smith. First his stomach grew weak and hee vomitted up all he took; yn came a hiccough and lastly death came suddenly."

Clearly I think a case of intestinal obstruction due to carcinoma.

"Goodie Cole was so sick yt euery one thought shee would haue died and wee gaue her:—Lenativ; Cremor Tartari; Resin Jalap, and some juniper berries and itt brought away ye wind and she grew very well quickly after itt; and withal now and then took a graine of laudanum or 2.

MIDWIFERY AND GYNÆCOLOGY.

One or two deaths after child-birth are noted thus:—

"Itt is daungerous combing a woman's hair in a short time after her lying-in as in my Lady Clopton's case wch was done a week after. In my Lady Clopton's case they would give her no opium for fear of fixing ye Tumour; they blooded her in ye feet and behind ye ears with Leeches."

It would appear from this that the careful arrangement of the hair previous to lying-in is not really for the comfort of the patient, as is usually thought, but is connected with a world-wide superstition of the intimate relation of the exuviæ with the life of the individual.

"Mrs. Higgins first was extreme hot and Restless before shee was delivred, afterwards her Courses broke downe; ye child livd she was delivred with but in 2 or 3 days died. After her delivry shee fell into a Cough and phlegme followed her much and about a Month after her deliverie her Legges swelled and yn shee died."

In the course of his duties Ward saw much of his sick parishioners and the diseases of women and children especially interested him. He was constantly trying to improve his knowledge and learn helpful methods thus:—

"Inquire more distinctly of Goodie Rickets concerning ye Lochia and ye Waters, how usualy they come and in what quantitie in or after deliuerie in child bed."

"I haue heard of a woman yt had a procidentia uteri 9 or 12 yeers together, and yet did not gangrene but shee did well and meeting with some Balls put it up and itt staid and she had seuerall children after yt time." "The Loosening of ye Ligaments or sometimes ye breaking of them is ye Cause of itts falling." "A pessary made in a procidentia uteri of cork with a hole in itt to let passe ye faeces uteri and so couered ouer with wax and some astringent powders mingled with ye wax and putt up." "Whether ye 3rd. fitt in an ague or feavour is not more yn ordinarily daungerous as I experience in a woman—Old Midwife Webb of Snytterfield."

Ward occasionally made an effort to generalise from the particular—a faculty which was only just developing in connexion with medicine, for he says:—

"Whether a great desire to liue wch some persons manifest uppon their sick beds, as allso a willingness to take any thing wch before they Refused is not a sign they are tending to their long home; obserue itt more frequently than formerly.

AGUE.

Ague was of frequent occurrence and there are numerous references to it, but it should be remembered that whilst there was much malaria the term ague was used for many cases of fever due to other causes.

"I aduised one yt had a Quartane to drink Scurvy-grasse drink and hee did so and found his well-days were much better yn before he drank itt."

Ward learnt this treatment from Dr. Bates—Oliver Cromwell's physician—who practised first at Oxford and afterwards in London, and was known as the "Scurvy-grass doctor."

"Allways take a surfeit or an Ague with a vomit in ye beginning. If pain in ye side bleed to bee sure." "What if a man should giue 3 or 4 drops of spirit of hartshorne or spirit of salt or any other volatile spirit constantly in a quartan ague to exalt ye blood by degrees, and so to get ridd of itt sooner. A surfeit or aguish feavour coming after a quartane, ye body not being duly purgd after ye Quartan, usualy ends in death; observed in Mris. Hopper of Loxly and Rowly of Eddington; attempt such people with a vomit first in cas I bee calld; bleeding does little."

In connexion with ague he gives an older variant of our adage, "Stuff a cold and starve a fever," for he says "Starve an ague and stuffe a cold."

DISEASES OF THE GENITO-URINARY ORGANS.

Diseases of the genito-urinary organs interested Ward nearly as much as the diseases of women and children, and a queer contemporary treatment is thus recorded:—

"A Bath usd by Mr. Canon of Bampton by advise of a Dr. when his water had been stopt 9 days; when hee first went in to this Bath hee felt easd; ye 2nd. time hee beganne to faint, but lying downe in his bed hee recouerd and yn pist with such violence yt ye stones might bee heard Rapping against ye pott side. Mr. Canon of Church-Bampton was often sett uppon his head by his sonne-in-lawe and then throwne downe to trie if possible to shake ye stone out of ye neck of ye bladder but all would not doe."

Ward does not say whether he had any twinges of the stone himself, but the mention of the bath in the case of Mr. Canon is followed immediately by the entry:—

"Gett a furnace to heat water in for a Bath and a Cock to lett itt into ye Bathing-Tubb, when hott." "For ye strangurie: Brew

some new Beer every morning for 12 mornings together and drink a quart of yt ye first (thing) Barme itt but doe not hopp itt; itt must bee fresh brewd every morning."

Another parishioner died of suppression of urine for—

"John Ventries told mee yt whilst his wife was sick no urine came from her in 11 or 13 dayes but her hands smelt of urine and all her bodie; yea, ye Curtains yt hang about ye Bed and ye hangings of ye Roome; yea, he said that when shee died she had nothing in her bladder notwithstanding shee was so long without urine. Whither should ye urine passe but per halitum."

Urinoscopy.

In his own opinion and probably in that of his neighbours as well, Ward was very skilful in urinoscopy, and there are many entries on the subject.

"Remember still to prognosticate by women's urine pains in their back." "A woman who had miscarried 3 weeks before sent her water to me. I obserud in itt much white flying consistencies wch very quickly settled to ye bottome in a white substance: itt argued some distemper of ye womb: for itt somewhat resembled ye sediment of childing women." "Mr. Lingen's sonnes water was palish like yt of strangurian persons and had much setlement in itt: hee had an intollerable paine in his head wch was I suppose a Collection of water gathered there after a feavour, being neuer purged." "Whether ye black urine does not allways signifie ye stone or ye black Jaundice." "In feavours when ye water is first high, yn muddy itt is a good signe, but if itt continues high not so." "When ye water is white remember in judging urines to harp uppon these things: ye wormes, paines or flux in ye bellie and paines in ye head." "There is great diversitie of urines: but yt of children and such as drink Rhenish is ye best."

Venereal Disease.

Syphilis and gonorrhœa were rife at Stratford-on-Avon during Ward's incumbency. He distinguishes clearly between them, but neither disease incurred his moral disapprobation. He looks upon them in a purely scientific spirit and as diseases to be cured. Of prophylaxis he says:

"The way to prevent ye pox is by syringing as ye Duke of Buckingham and some other madde fellows doe, or else by taking a horse and riding immediately after wch I haue heard is ye most undoubted way." "Mich. Palmer troubled with a gonorrhœa and a swelling in his groin wch swelling seemd to mee who handled itt to bee about ye upper part of vasa deferentia towards ye bladder, itt is much swelled sometimes. Whether itt may not be caused by ye putrefying of some humours about ye part or rather ye sperme."

This appears to have been a case of gonococcal infection complicated with a hydrocele, but the term gonorrhœa was used in its etymological sense. It consequently included the discharge in cystitis, tuberculous disease of the kidney, prostatic abscess, as well as the specific inflammation due to the gonococcus.

ON EMBALMING.

Even death did not end the interest he took in the bodies of his parishioners. He gives details of the process of embalming, and it would not surprise me if an embalmed body were found some day in the churchyards of Stratford or Welford, the two parishes which he served.

Malignant Disease.

"In the Autumn of 1665 a cancer in Mris. Townsend's Breast of Alveston was taken off by 2 surgeons. First they cutt ye skinne cross and laid itt back; yn they workt their hands in ytt one above and the other below and so till their hands mett and so brought it out. They had their needles and waxt threads ready but never used them, and allso their cauterising irons, but they used them not. Shee lost not above ℥vi of blood in all. Dr. Needham ..... said itt was a Meliceris and not a perfect cancer, but it would have been one quickly. There came out a flow of a great quantity of waterish substance as much as would fill a flaggon. When they had done they cutt off one one bitt and another another. Put a glass of wine in and some lint and so let it alone till next day. Yn they opened itt again and injected Myrrhe, Aloes, and such things as resiste putrefaction and so bound itt up again. Every time they dressed itt they cut off something of ye cancer yt was left behind. Ye chirurgions were for applying caustick, but Dr. Needham said 'No, not till ye last, since she could endure ye knife.' They prepared her body somewhat, yn let her blood ye day before. She endured it with infinite patience all along, not offering to lay her hand uppon itt to ease itt, but a warme cloth to ye other breast all ye time. ..... The way how and where itt should be cutt away was markt out with Ink by one Dr. Edwards, who lives at Bridgnorth. ..... Hee said iff they could prevent a Gangræna there was little fear, butt itt might be a cure iff she fell not into a feavour."

She recovered from the operation, survived an attack of small-pox, and died a year or two later. Ward records the post mortem.

"Mris. Townsend of Alveston being dead of Cancer Mr. Edis and I opened her breast in ye outward part and found itt very cancrous; itt had been broken and a Mellicerous part was yet remaining when wee saw itt; wch being Launct yeilded 2 poringers full or more of a very yellow substance wch came plentifully out of the Cauitie of ye breast; yt flesh wch was grown againe after part was taken out was of a hard, grisly substance wch seemd very strong. The Ribbs were not putrified as wee could discouer nor anything within ye breast of a Cancrous nature for wee runne ye knife within side ye breast through ye intercostal muscles. Dr. Needham hath affirmed yt a cancer is as much within as without ye breast and hee hath seen a string, as I was told, going from ye breast to ye womb. I suppose itt was ye mammillarie veins full of knots wch were cancerous and hung much like ropes of onions. The cancer was a strong one as was evident; wee wanted spunges and things conuenient or else wee had opend ye cauities of ye breast."

REFERENCES TO CONTEMPORARY PHYSICIANS.

Ward says of physicians generally—

"There are seueral sorts of physicians 1st. some yt canne talke but doe nothing; 2ly some yt canne doe but not talke; 3rdly some yt canne both doe and talk; 4thly some yt canne neither doe nor talk and these get most money."

This was merely a jest, however, for some of the men he most revered were his friends and contemporaries, the great physicians of their age.

Perhaps the most interesting observations in Ward's note-books are his references to Dr. Willis, Dr. Lower, Robert Boyle, and others of his contemporaries who were personally known to him as graduates of Oxford. The references to the Hon. Robert Boyle, the chemist and physicist, are so numerous that they cannot be dealt with at present.

Dr. Thomas Willis.

Dr. Willis, described by Needham "as next to Dr. Harvey, the glory of our English nation," gave his name to the circle of Willis, and is now remembered as an anatomist. Ward, however, knew him as a practising physician, and throws much light upon this little known side of his life. Willis left Oxford in 1666 and settled in London, taking a house in St. Martin's Lane, where he soon obtained a large practice, not wholly to the liking of the other London physicians, for Ward says:—

"Sydenham and some others in London say of Dr. Willis yt hee is an injenious man but not a good phisitian and yt hee does not understand ye way of practice."

Be this as it may, Willis drew attention to wasting disease associated with sweetness of the urine, and may thus be claimed as the discoverer of diabetes mellitus. He also wrote on hysteria, and Ward says:—

"Dr. Willis used with histerical women this method 1st. vomited ym; next gaue pills and cured seueral."

Ward records:—

"Crabbs eyes powdered and put into vinegar where they will ferment, yn decant ye vinegar and after yt make use of itt. Dr. Willis his receipt. Remember yt I inquire of D. C."

D. C. was Court, who was "prentice to one Mr. De Laune an apothecarie in blackffryers in London." Mr. De Laune is now known to us as one of the early masters of the Society of Apothecaries.

"Remember to inquire about Dr. Willis his syrup of sulphur when I goe to Oxford and see and buy some of itt." "Whether a disturbed urine does not usualy signifie some paines in ye head. Remember to trie itt." "Whether ye giving a clyster euery day to persons in a malignant feavour with salt of wormwood and a spoonful of juice of Oranges is not very proper. Dr. Willis usd itt with Mr. Levine." "Dr. Willis after his antiscorbutick electuarie made of cons. of Lujula, Cochlearia, Crabs eyes and spec. Diatria. santalon and juice of Lemon with troches of Rhabarb." "Prescribe juice of nasturtium, dandelion and juice of scurvy grass with white wine to take six spoonfuls of itt after ye electuarie. Dr. Willis hath an admirable way of making juleps but not by distilled water as many doe." "Remember to trie sulphur and honie for a cough and garlick pricked ful of holes and butter. Dr. Willis his balsame of sulphur some such thing." "Remember yt I inquire what Dr. Willis his dyet drink was and resolue to make much use of dyet Drinks in Hectiques and know like wise what Sallamans dyet drinke is and means." "Dr. Willis praescribed Vervaine water and ye powder of Vervaine for ye headache." "Salt of Tartar and Ginger ye best way of praeparing Apium withal, as Dr. Willis affirmes."

Parsley was used in coughs and colds as well as a lithontryptic. The use of salt of tartar is an indication of Dr. Willis's adherence to the newer school of chemical physic as opposed to the older physicians who depended rather on herbs and roots for their remedies.

"Dr. Willis advised Mr. Treble to infuse filings of Iron in white wine yn mix with itt aq. Limacum composita and aq. Lumbricorum. When hee took ye water hee took pills constantly and an electuarie."

The iron tonic here recommended would probably have been equally satisfactory without the snails and earthworms, though there are some who still believe in the virtues of mucin.

"Dr. Willis much commends Firres ale; I suppose because it holds sulphur in itt wch volatilises ye blood." "My Lrd. of Downe dead under Dr. Willis his hand in fluxing as I hear." "Dr. Willis hath rich peaces of plate presented him as well as great ffees as Mr. ffrancis says." "Dr. Willis his purges generaly are very gentle ones but on ye contrarie Dr. Speed's are very feirce." "Dr. Willis said yt ye Duke of Cambridge had mala vitæ stamina."

This was equivalent to saying, in the language of the present day, that he had "specific disease." It was

spoken of Charles, Duke of Cambridge, who died on May 5th, 1661, the eldest child of James II.—then Duke of York—and Anne Hyde, his wife. The statement is said to have cost Willis the Court practice which he was just acquiring, though, as Willis was a staunch Protestant, there may have been other causes to account for the loss. The child afterwards came under the care of Sydenham, for Ward says:—

"There was a great phlogosis in ye Duke of Cambridge his bowels; Dr. Sydenham kept ye Duke of Cambridge alive 3 weeks and the Dutchess thought hee would really have cured him; hee did itt by some cooling water or other wch hath got him some credit. Hee was also with Sir Richard Bishop for his gout, but did little except pultisse him with milk and crumbs of bread. Hee aduised Mr. Bishop to fast one day in a week for his Rheumatismus so yt humor would spend ittself."

Salt of vitriol is reckoned by Dr. Willis amongst such vomits as work gently.

"Remember yt I studie ye Braine more particularly with its office and use and diseases incident to itt according to ye new anatomie and not ye old stuffe (1663, October)."

In pursuance of this design Ward must have bought Willis's Cerebri Anatome as soon as it was published, for in February or March, 1664–65, he makes extracts therefrom.

Blood Transfusion by Dr. Lower.

There are various entries about Lower, and descriptions of experiments conducted by Lower or at his instigation.

"A dissection Thursday November ye 16 (1664) first of ye Testicles, of ye spleen, then of a bitch wherein wee saw many excellent things; ye parastate; vasa deferentia, prostate and so ye common passages." "Syringe some ink into ye Crural arteries and itt appears in ye vein wch argues an anastomosis."

It is clear from this that the anatomical proof of the circulation was not yet complete.

"Dr. Lower let one dog's blood into ye bodie of another by opening ye veins of one and ye arteries of another and putting in a quill into each and so letting one blood on ye other side; ye one died, ye other liud; another dog yt had 2 Vena Cavas as they say.—Dr. Lower."

"They had syringed in Beer into ye Crurall Arteries and likewise Infusi Croci Metallorum."

The crocus metallorum, or liver of antimony, was a violent cathartic and emetic. It was given in doses of from 3 to 6 gr.

"After a dogge hath been let blood and lies dead at your feet you may let ye blood of another dogge into his veins and so reuiue him againe; inquire further into ye truth of it."

These experiments of transfusion are recorded by Ward in the year 1665. They refer to Lower's classical experiments on transfusion which were suggested by Christopher Wren's injection of various drugs and poisons into the veins. Lower passed blood direct from the artery of one dog into another in February, 1665, at Oxford, in the presence of Robert Boyle and others. Ward perhaps rode over to Oxford from Stratford to see the experiment. On Nov. 23rd, 1667, Lower transfused Arthur Coge at a meeting of the Royal Society, but it is only in the recent war that his methods have been employed so extensively as to have passed beyond the experimental stage. They are now firmly established as a remedial measure of great value in properly selected cases and with some modification of technique.

"The Diaphragma is a muscle and is of use in Respiration and I haue heard yt Dr. Lower says yt broken-windedness proceeds from a breaking some vessel in ye diaphragme and yt hee can make a dog suffer and appear as broken-winded by cutting them." "Linseed oil and oil of sweet almonds usd by Dr. Lower to bee likt with a stick of Liquorish for distempers of ye lungues." "Dick Lower told mee yt they had searchd ye Testicles of a Boar and could by no manner of means find yr any but one small nerve coming thither, whence they conclude yt ye sperme cannot be ye result of ye succus nervosus but somewhat else from ye arteries."

This was a part of the experimental inquiry which destroyed the long-established hypothesis that the fructifying power of the semen was derived from the nervous system in the form of a succus nervosus.

Sydenham, Scarborough, and Prujean.

"Dr. Sydenham aduises a vomit 2 hours after a gentle dinner; after vomiting hee giues a narcotick potion or Bolus to allay ye tumult yt ye vomit hath made."

Of Sir Charles Scarborough, to whom Dr. Harvey left his gown, Ward says:—

"Dr. Scarborough. There was a person dissected att London about October, 1664, who wanted the pectoral muscles, yet had ye right use of his armes, as I heard, wch Dr. Scarborough said was neuer heard of before."

Sir Francis Prujean.

"Dr. Prujean came from Lincoln to London; hee was a mean man at first and was faint to leave London twice or thrice because he could not get a maintenance there."

Many of us, no doubt, have felt the same. Sir Francis Prujean (1593–1666) was the son of the Rector of Boothby in Lincolnshire. He was a sizar of Caius College, Cambridge, and after graduating he practised in Lincolnshire till 1638. He then settled in London and acquired a large practice, attending Queen Catherine when she had typhus fever, and became President of the Royal College of Physicians.

Fraizer, Needham, Peachy, and Hollier.

"The Queen's distemper, I hear, is too eager flowing of ye menses and thereof she is aduised to go to Tunbridge waters wch Dr. Phrasier says will confirm and strengthen ye parts." "The King hath a hight opinion of Dr. ffrasier and says all ye physicians are fools to him." "A whey of Dr. phrasier for Mr. Bishop ℞ Marmor. Calabr. ʒiij., Cremor tartari ʒ/s.; Seri lactis lib. ij." "Dr. Phrasier gaue some pills to Mr. Bishop for his Rheumatismus likewise but I imagine not with much success as appeared by ye effects."

Sir Alexander Fraizer was a member of the Durris family and was born about 1610. He probably received his early education at Aberdeen and in 1635 he graduated M.D. at the University of Montpellier. Returning to London he was elected a Fellow of the Royal College of Physicians in 1641. He was an ardent Royalist and shared the exile of King Charles II., who appointed him physician-in-ordinary after the Restoration, and created him a baronet of Nova Scotia in 1673. He attended many members of the Royal family and was in charge of the operation of trepanning Prince Rupert's head in February, 1666. He died in May, 1681. Clarendon says of him: "He is good at his business, otherwise the maddest fool alive." Fraizer had such influence with the King that once when he was arrested for debt he caused the bailiffs to be apprehended, committed to the porter's lodge, and there, by the King's command, soundly whipped, from which the Justice himself very narrowly escaped.

Dr. Needham.

"Needham allways aduises to praescribe even in feavours something against ye wormes; hee hath proued itt successful." "Mr. Needham, a physitian, livs sometimes in Shrewsbury, sometimes out att Gentlemen's houses." "Needham saies there is use of old Commentators as there is old posts and stones: though itt bee but to show where ye old Road was." "Says Needham I resolue, only there bee very great urgence or an immediate necessitie for sauing life, yt I will not open a vein. Hee adds, likewise, unles there bee some other extraordinarie occasion for Physitians make blood-letting but as a prologue to ye play."

Marchmont Needham (1620–1670) was the son of an Oxford graduate who married the daughter of mine host of the George Inn at Burford. Marchmont was a chorister of All Souls at Oxford and got his degree in 1637. Ward says at this period of his career he lived in the house of Dr. Bathurst, with whom Harvey used to work at Trinity College. Needham afterwards became an usher of Merchant Taylors' School and was admitted a member of Gray's Inn in 1652. He was essentially a pamphleteer, writing both on the Parliamentary and the Royalist sides. In 1665 he published the Medela Medicinæ which is here quoted by Ward. It created a considerable stir in the medical world and was answered by Sprackling and Castle.

Mr. Peachy.

"One Mr. Peachy of London cures quartan agues; hee first purges yn gius his haust 3 days when ye ague is to come; itt sweats somewhat and they must keep their beds; itt comes away by urine, as hee says." "Hee acknowledges Gentian roots and ye Jesuits bark in his haust."

If this is either of the two Peacheys of whom an account is given by Mr. G. C. Peachey in *Janus*, 1918, pp. 121–158, it must, Mr. Peachey thinks, be John Peachi, Minister of S. Paul's, Walden, who afterwards became M.D. Caen, and an extra Licentiate of the College of Physicians of London.

Mr. Hollier.

"Mr. Holliard ye great Chirurgion in Warwick Lane was a poor boy in Couenterie, his father wos a cobler or at best but a poor shoe maker in Couenterie; and one Dr. Mathias (I think he was Queen Anne's Dr.) about yt time frequently coming to Combe Abby and using Couenterie much spoke to Abraham Ashby, an Apothecarie there, to help him to a boy to dresse his horses and ride along with him; and Mr. Ashby spoke to Mr. White ye school-master who told him hee could help him to one but his father was a foxing drunken fellow; and ye boy yt hee helpt him to was this Mr. Holliard ye Chyrurgeon; afterwards Dr. Mathias died and Mr. Holliard got himself a little monie and put himself prentice to Mr. Mullins his father of Shooe Lane and now hee comes to what hee is. Dr. Phipps likewise livd with this Dr. Mathias before Phipps went to travel.

This gossip about Hollier is interesting, and was evidently the contemporary belief. Hollier was the surgeon who cut Pepys for stone. He became Master of the Barber Surgeons' Company in 1673. I have given an account of him in "Occasional Papers of the Samuel Pepys Club," Vol. I., p. 58.

James Molines, to whom Ward says Hollier apprenticed himself, was "surgeon for the stone," and was reputed the most skilful lithotomist of his generation. He died in 1639, and he was succeeded both at St. Bartholomew's and St. Thomas's Hospitals by his son, Edward Mullins, a turbulent and quarrelsome person. Edward Mullins was accordingly dismissed from his post at St. Thomas's Hospital in 1664, his place being taken by Thomas Hollier. Edward Mullins, however, was reinstated as fourth surgeon to St. Thomas's Hospital in December, 1660, and died in 1663. Ward adds a few more details of Hollier, for he says:—

"Mr. Charles Danvers married to ye daughter of one Mr. Holliard, a chyrurgeon, in London. Remember to write to him for a pair of gloues speedily." "Remember to write to Charles Danvers and to get intimate acquaintance with his father Holliard and to see Amputation made and Cutting of ye stone." "Inquire what ye vomit was wch Mr Brooke says Holliard gaue him wch was but a spoonful mixt with some other stuff wch made him vomit half a dozen times."

OBSERVATIONS ON DRUGS.

The properties of opium, laudanum, and antimony were the subject of considerable inquiry in Ward's time, and he makes several allusions to these drugs.

Opium and Laudanum.

"The praeparation of Opium in ye Shops is Imperfectly done by adding saffron, cinnamon, and other aromatical druggs to make itt into a Laudanum, whereas ye correction is better performed by a digestion of opium in wine yt is impregnated with an equal weight of Salt of Tartar, ye great power of wch Salt is to correct ye violent as wel as ye Narcotick part of ye Medicine as may bee seene in Mathews his pill, wherein there is a great quantitie of white hellibore, and Salt of Tartar is ye great Corrector."

"Laudanum dissolud in a little Treacle-water and a little syrupe added to itt is excellent in some cases—a graine and a half or thereabouts." "After ye taking of Laudanum, I obserud yt they rise againe very sick and hott and their sleep was only a slumber." "Starkey told me that ye sleeping properties of Opium may bee separated so as to make itt a hinderer of sleep but ye sudorific and anodyne qualities cannot."

Laudanum, therefore, was at this time a solid, and was dispensed by the grain.

Antimony.—The composition and properties of antimony were still the subject of much inquiry, because, under the influence of Basil Valentine's teaching, it was looked upon as a universal panacea. In 1678—12 years after Ward's notes were made—there were no less than 106 preparations of the metal in more or less common use. Crude antimony was thought to be a mineral consisting of (1) a sulphur partly golden and partly combustible; (2) an undigested mercury of the nature of lead; (3) of a saline and earthy substance. Ward writes that—

"Antimonie hath much salt in itt but little metallic sulphur only much arsenical sulphur." "An antimonial (cuppe) is made of Iron in ye fashion of a horne." "Antimonie is a rare bodie betwixt sulphur and Lead, somewhat higher yn sulphur but lower yn Lead. Mr. Bartley greatly aims att ye Mercury of itt, wch I believe hee thinks would open ye bodie of gold: and his reason is this because wee see how itt mixes with gold and merges itt as in ye Antimonial. Hee can allreadie separate ye good Sulphur from Antimonie and itt maks him in great hopes yt hee shall doe ye Antimonie only; hee saies there is an Arsenicall sulphur wch yet hee cannot get out and yt hinders his separation of ye Mercurie." "Antimonie melted with gold will make ye gold look just like itself if itt bee put in just when it is melted, but yn melt ye gold uppon ye Test againe and yt contrariwise flies away, itt purges and makes brittle ye gold yt is very certain." "Take ye emetike qualitie from Antimonie and ye Narcotick from opium and what canne they not doe."

CONCLUSION.

These extracts show the Rev. John Ward as a man of great versatility at a time when the prevailing type of mind was versatile. In many respects he was a true disciple of the Honourable Robert Boyle. Interested in medicine he would have made a good practitioner; a friend of Lower, as a physiologist he would have advanced the science. Willis could have utilised him, and had he stayed a little longer at Oxford he might have come under the spell of John Mayow, the most gifted of the band. Boyle had interested him in the new chemistry, and his restless curiosity led him into metallurgy and the more dangerous quest of the philosopher's stone. But with all this he was a dilettante—spoilt, I think, by the possession of a competency, hampered perhaps by ill-health. He was certainly ruptured, and he died at the early age of 52, probably of phthisis.

THE APPLICATION OF BONE-GRAFTING IN THE TREATMENT OF FRACTURES.[1]

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UNTIL recent years bone-grafting has been an expedient used only in exceptional cases. But lately, owing to the work of Albee in America, and also to the large number of cases where a serious loss of substance in the shaft of a long bone has to be made good, the application of bone-grafts for the repair of fractures has become comparatively common. In fact, bone-grafting has been so much in vogue that there has been a tendency for zeal to outrun discretion, and so many failures and disappointments have resulted that it is liable to fall into discredit. When used properly, with due regard to vital and mechanical principles, it not only gives good results, but results which cannot be obtained by any other method.

The proposal that recent simple fractures should be treated by a sliding bone-graft taken from the broken shaft is unlikely to be widely adopted for good reasons. It is an operation requiring special skill and experience, and appears to do either too much or too little. In the great majority of recent simple fractures correctly applied axial traction, followed by early movements of the joints, will give rapid functional recovery which leaves nothing to be desired. For such cases bone-grafting does too much. In other cases where there is a persistent tendency to displacement of the fragments (for example, in the middle of the shaft of the radius or at the upper end of the femur) the little slender graft is not strong enough to maintain the osteo-synthesis, and the limb has to be immobilised for a long time in plaster.

Intra-medullary Bone Pegs.

Those recent fractures which require operative treatment usually present a displacement, which is caused or kept up by muscular tension or static conditions. The treatment required will thus be correct apposition and alignment, with as little interference as possible with the vascular and osteogenetic sheath of the bone fragments. Such a method of treatment is found in the application of an intra-medullary bone peg—a method which I venture to think is not sufficiently known or applied. The operation finds its simplest and most typical scope in the treatment of a fracture of the radius, where both ends are displaced towards the ulna, a condition which is almost certain to lead to synostosis unless this displacement is corrected. The pegs, which are 1 to 2 inches long, are made in sets of 8, varying in thickness from $\frac{3}{16}$ up to $\frac{1}{2}$ inch. Each has a small boss or ring at its centre, by which it is prevented from being pushed too far into one fragment. Three conditions limit the scope of the use of the simple intra-medullary peg: (1) the case must be a clean one; (2) there must be no comminution of the fragments; and (3) the fracture should be nearly transverse. (Figs. 1, 2, 3.) If used for the femur the short intra-medullary peg will not serve to maintain correct alignment and bowing will inevitably occur unless a suitable moulded splint or a walking calliper is used.

The bone-peg constitutes the simplest and most efficient type of bone-grafting for fractures that can be devised. The peg becomes rapidly permeated by living tissues and is incorporated by them in a period varying from 3 to 18 months. The bone-graft may have a double function to perform. First, it has to act as a mechanical strut or splint, and for this it requires strength and accurate fitting; secondly, it may have to take the place of lost bone; if no bone has been lost the graft will become absorbed. It is a consideration of these facts which should determine the choice between a dead beef bone or living autogenous grafts. If the graft has merely to act as a temporary nail or peg then the advantage is with the dead bone.

[1] A lecture delivered at the West London Post-Graduate College on Feb. 13th, 1920.

because this can be chosen beforehand of the exact size and shape required, and, moreover, it can be taken of much greater density than is often possible with autogenous grafts. If a graft has to be completely buried in vascular living bone, then a dead beef bone is just as efficient as an autogenous graft. But it is quite another matter if it has to span a gap, for that part of the graft which is not in contact with living bone will survive only with difficulty; it cannot be converted into, or replaced by, living bone except by the very slow process of vascularisation from the two ends, where it is in touch with live bone. If sepsis is present a dead bone-graft will be capable of no resistance, but will be a focus for bacterial lodgment; but, as I shall presently show, living bone-grafts are capable of some degree of survival under a moderate degree of sepsis, and although

FIG. 1.

FIG. 2.

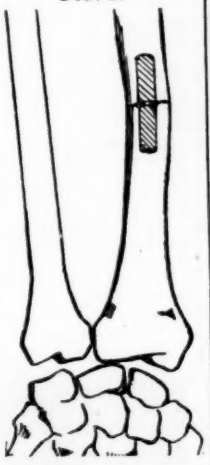


FIG. 3.

FIG. 1.—Typical displacement of a fracture in the middle of the radius.
FIG. 2.—Short bone peg in position.
FIG. 3.—Showing how the short bone peg is inserted.

I am much indebted to Miss D. Pillers for the drawings used in illustration of this article.

ultimately a sequestrum may be lost, yet a sheath of new bone is laid down which is probably derived in large measure from the cells of the graft itself.

Exceptional circumstances sometimes justify the employment of beef-bone grafts even for gap fractures. One patient had already had an unsuccessful grafting operation done, the graft having been taken from his own leg. As he said that his arm was none the better and his leg was the worse for the operation, he naturally refused to have a similar operation repeated, but was prepared for anything which did not sacrifice his own tissues. In such a case the graft is prepared from an ox shin bone of the exact size and shape required. It is perforated by many holes, which facilitate its rapid vascularisation by the tissues in which it is laid.

The Behaviour of Living Autogenous Grafts.

I do not propose to enter into any discussion of the exact parts played by the cells of the graft and those of the bed into which it is laid. Neither shall I attempt to determine the relative importance of different parts of the graft. But I would like to point out certain easily demonstrated characters of the graft which have important bearings on the practice of bone-grafting.

1. *Limited power of growth.*—A living graft does not grow at all in length, and only very slowly in thickness. It does not become thicker unless or until it has become incorporated in the skeleton when it is subjected to the strains and stresses normally borne by the long bones. From this it follows that the graft should, if possible, be made of the full length and thickness of the bone which it has to replace. An illustration will make this clear. A small piece of tibia has been inserted into a gap fracture of the radius. After some months the graft had become rarefied and no union had occurred. It was then sought to make the grafted bone firm by the addition of a plate, which was attached with difficulty owing to the fragile nature of the bone. This had to be removed later because of the irritation caused by the plate just beneath the skin, and the fracture still remained ununited. In this condition the patient came to me and I inserted a tibial graft of the same thickness of the shaft of the radius. This has grown firmly in place, and now, six months later, forms an integral portion of the skeleton, as seen by X rays.

2. *The importance of correcting deformity before the graft is inserted.*—A graft cannot be expected to act as an intelligent agent and actively correct a deformity. Obviously the deformity must first be corrected as far as possible, and then the graft of suitable size and strength must be so soundly fixed as to prevent recurrence of the displacement. For example, in the familiar displacement associated with a gap fracture of the lower part of the shaft of the radius, the deviation of the radial fragments towards the ulna, with the resulting dislocation of the hand, it is necessary forcibly to separate the radial fragments from the ulna and to make the graft rather longer than the gap it has to fill, in order that the radius may remain bent outwards away from its companion bone. The restoration of the radial curve is necessary to restore its "bucket-handle" action, required for the movements of pronation and supination.

3. *The necessity for firm fixation of the graft.*—Whatever vital properties a graft may have it can only grow to its bony bed if it is fixed firmly thereto. It is not like a vegetable seed or plant cutting, which is capable of throwing out roots far and near; all it can do is to receive, and contribute towards, a little cement substance which will join it to an adjacent live bone with which it is in firm contact. Therefore wide apposition, accurate fitting, and firm fixation are essential to the vital union of a graft with its bed.

Two experiments on cats' tibiæ illustrate this point. In both half the thickness of the tibia was cut out for ¾ inch and the remaining shaft was divided. In one the removed portion was replaced and tied with catgut, in the other it was fixed by split pins and washers. In both the leg was immobilised by a double transfixion apparatus. In that specimen fixed by catgut the graft has become displaced and there has resulted a typical ununited fracture. In the other, where the graft was fixed by metal pins, firm union has taken place.

There is a modern tendency to credit metal sutures with a capacity for hindering repair. Of course they may do so under certain circumstances, but, on the other hand, if they afford the best means of fixation of the graft to its bed they are of great value, even if they have to be removed ultimately. Fig. 4 is from a case of a gap fracture of the radius treated by a "cricket-bail" graft in which the fragments of the radius were so fragile that it was necessary to bind them with wire sutures to prevent splitting. The figure is taken a year later, and shows complete fusion between the graft and its bed, the wire still remaining in position. It is perfectly true in bone-grafting as in joinery that the best work consists in fitting without the use of nails, screws, or wire. But there should be no hesitation in deciding that when fixation requires a metal suture, this should be employed in preference to allowing a loose contact between the graft and its bed.

4. *The capacity of a living graft to survive under septic conditions.*—One of the most striking qualities which distinguishes a living autogenous graft from a beef-bone graft is its capacity for survival, in whole or in part, in septic conditions. Two illustrations of this are given, but the phenomenon is of such common occurrence that these might be multiplied many times. In the first (Figs. 5 and 6) a gap fracture of the radius was repaired by two tibial grafts bolted together over the ends of the radial fragments. After a few weeks a sinus appeared, and three months later the X ray showed a quantity of new bone round the periphery of the grafts and a central sequestrum in the middle. The bolts and the sequestrum were removed and healing took place. A year after the original operation a dense mass of new bone occupied the place of the graft.

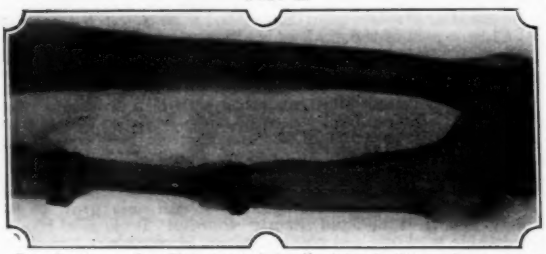
In the second case a single stout "cricket-bail" graft was inserted into a gap fracture of the radius. Chronic suppuration resulted, with the formation of two sinuses. The X rays clearly showed that a portion of the graft formed a sequestrum, but that there was abundant new bone around it. A later figure showed the restoration of the radius after the dead portion of the graft had been removed.

This behaviour of a living autogenous graft in the presence of sepsis is, I believe, intimately associated with the preservation of the periosteum of the graft. Although I have seen a naked graft heal in position without any periosteum, this has only taken place when the wound has run an aseptic course. Moreover, there has never been any appearance of a sheath of new bone by which the graft has been increased in thickness; in fact, the naked live graft

behaves exactly in the same way as a bit of beef bone. But in the cases just related and in many others where periosteum is used there is an abundant formation of peripheral new bone, and if sepsis occurs there is usually a separation of a sequestrum from the graft.

This is readily explained without assuming any osteogenetic function for the periosteum. The periosteum is a vascular connective tissue membrane which readily establishes vascular connexions with the tissues into which it is transplanted, and it thus serves to link up rapidly the blood-vessels of the graft with those of its bed. Then, if inflammation occurs, the cellular elements of the bone survive where they are free to multiply on its surface, but die in the labyrinth of the Haversian canals where they are choked; in fact, the process is exactly the same as that which occurs in the course of a subacute osteomyelitis.

FIG. 4.



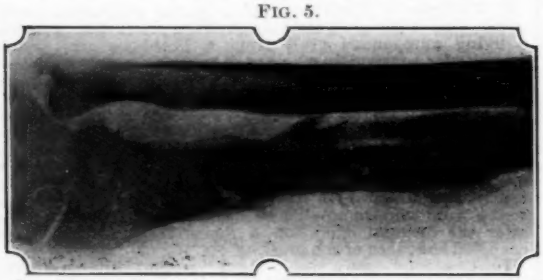
Gap fracture of radius treated by "cricket-bail" graft one year after operation.

The Vital Characters of the Tissues of the Bed into which the Graft is Laid.

These may be considered under the three headings: 1. Latent sepsis in scar tissue. 2. Atrophy of the bone ends. 3. Sclerosis of the bone ends.

1. *Latent sepsis.*—It will not be necessary to dwell on this subject at any length, because it has been so fully discussed in numerous papers dealing with post-war surgery. To some extent it is the most difficult factor in the whole situation, because it is so elusive. At one time it was thought that mere passive delay for a few months would enable the tissues to carry out an auto-sterilisation. But this is often a fallacy. For months, or even years, after a septic gunshot wound, particularly when this has involved the bones, the germs of sepsis lie dormant in the scar tissue ready to spring up to renewed youth and activity if circumstances become favourable. In particular, the streptococci and the *Bacillus coli* behave in this manner and are always ready to wreck the best-laid scheme of bone-grafting. Better than passive waiting for auto-sterilisation is the plan of a careful excision of scar tissue from the bed of the future graft, together with removal of the ragged ends of the broken bone and the replacement of cutaneous scars by pedicled skin flaps from other parts of the body. But this is a very difficult process to carry out in such a way that fresh infection of the tissues does not occur, so that ultimately nearly every bone-graft operation performed for an originally septic wound has to combat some degree of latent sepsis.

FIG. 5.



Gap fracture of radius; the repairing bone-graft shows central necrosis.

In such combat the tissues themselves will be the most powerful agent for recovery, and it is therefore very important that complete hæmostasis, absolute immobility, and absence of any "dead" spaces should be ensured. In this matter it is a question of minute care in tying vessels, suturing the tissues in layers, fixing the graft to the bones so firmly that no movement is possible, and providing for the immobilisation of the limb so that dressings can be done without any disturbance thereof.

2. *Atrophy of the bone ends.*—In every gap fracture when the ends of the bone have been prevented from coming into contact by the presence of a companion bone (for example, in the forearm or lower leg) or by axial traction the bone undergoes a rapid atrophy. This atrophy is of a perfectly constant character, which has an important bearing upon the mechanical question of repair. It consists chiefly in the absorption of the bone salts and a disappearance of the inner portions of the shaft. Under the X rays the bone appears very transparent; when it is exposed and the end cut off the marrow cavity is much enlarged and filled with soft yellow fatty tissue. After some time it is reduced to a mere shell, so thin that in the bones of the forearm it can easily be crushed by a carelessly applied forceps or even by pressure between the thumb and finger. However much the atrophy, the outside diameter of the bone remains of its original thickness, and at the periphery a thin layer of dense bone is always preserved. Such a bone retains a certain degree of strength simply by virtue of its tubular character. If the tube is destroyed by cutting a piece out of its wall it will split or collapse. Nothing can be screwed to the outside of such a bone, because there is no substance on which the screws can take hold, and if a bolt be passed right through, the tube will collapse if any pressure be made from side to side.

If a graft has to be fixed to such an atrophied tubular bone there is only one way in which this can be done with mechanical efficiency, and that is by preserving the periphery of the tube intact and driving the graft into its cavity.

3. *Sclerosis of the bone ends.*—If the ends of the bone are not kept apart by a companion bone or by traction they rub against one another, and if callus union does not occur they undergo a thickening and sclerosis with the formation of a fibrous union or a false joint.

Under these circumstances the bone ends become of ivory hardness, the vascular canals being filled with new bone and the periphery being thickened by osteophytic outgrowths. Although in one sense such a condition represents overgrowth of bone, it is in reality a type of scar tissue in which vascularity and living cells are reduced to a minimum,

FIG. 6.

The same case as Fig. 5 one year later, showing massive regeneration of new bone.

whilst inert fibrous tissue and bone salts are present in excess. The main practical consideration is that the sclerosed bone end, as much as the atrophied, is a morbid condition and that the structure which is responsible for non-union of the fracture will equally prevent union with a graft.

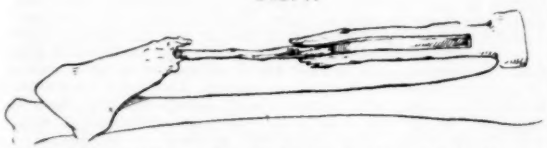
These facts lead to the consideration of the operation of the sliding graft when applied to the treatment of an ununited fracture. Fig. 7 is from such a case and is quite typical of the failure which usually attends such an operation. It is from a gap fracture of the radius; a piece of the proximal fragment, about 2½ inches long, had been cut by a twin saw and slid down to a groove in the distal fragment. No union had taken place six months later, and the patient declined any further operation. The graft in such an operation is taken from the most unhealthy and indolent portion of the bone, and it is laid into a bed composed of similar tissues. Moreover, it is so small in size that it cannot act as a strut to the broken bone, which itself is weakened by its loss.

The Technique Employed in Bone-grafting for Ununited Fractures.

General and preliminary technique.—Certain preparatory operations have usually to be performed after the wound has soundly healed. These are: (*a*) Replacement of adherent or thin cutaneous scars by pedicled flaps containing skin and fat taken from the chest or abdomen in the case of the arm or from the opposite limb in case of the leg. (*b*) The excision, after a few months, of all deep scar tissue, including the unhealthy

ends of the bone fragments. A culture is taken from this scar tissue, and if a positive result is obtained a vaccine is prepared and given to the patient in suitable doses for a period of about six weeks. (*c*) About two months later, if the preliminary operation healed smoothly, and about six months after healing if sepsis was awakened, the bone-graft operation is undertaken.

FIG. 7.



Failure of sliding graft applied to gap fracture of the radius.

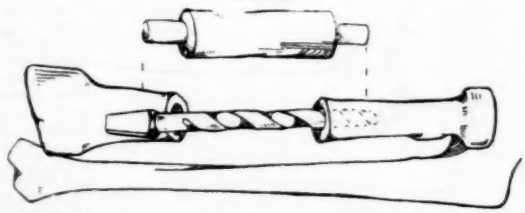
The method by which immobilisation of the limb after the operation is to be secured must be carefully arranged beforehand. The use of plaster-of-Paris at the time of operation is subject to several serious disadvantages. There is usually much oozing after these operations, and this will make the plaster case foul. A window may be cut over the wound at the time, and by packing in pieces of cellular rubber sponge the serum is to some extent prevented from running between the limb and the plaster. But I am distinctly in favour of postponing the application of plaster until all oozing has ceased. The humerus is the most difficult bone to fix. The best plan is to make a plastic splint of buckram and glue, which should take a broad bearing from the chest and iliac crest and also support the arm in full abduction. To this

FIG. 8.

Gap fracture of radius with displacement over ulna.

splint the patient should have become familiarised for several weeks before the operation. In the case of the forearm an internal angular splint with a "cock up" rest for the hand is sufficient for the first week, and then a plaster or two-piece moulded splint can be fitted. For the thigh a Thomas splint, cradle splint, or a sling to an overhead beam is sufficient for the first period, and at the end of a week plaster-of-Paris as a spica or a moulded splint should be used. For the leg below the knee a bent Thomas splint or Macintyre is best for the first stage, followed by a plaster case. The whole limb is shaved and painted with 3 per cent. picric acid in spirit. At the time of operation it is covered by a piece of sterile stockinette, through which the incisions are made. The edges of the skin incision are fastened to the stockinette by Michel's clips. No tourniquet is used. The surgeon wears cotton gloves over rubber to obviate the

FIG. 9.



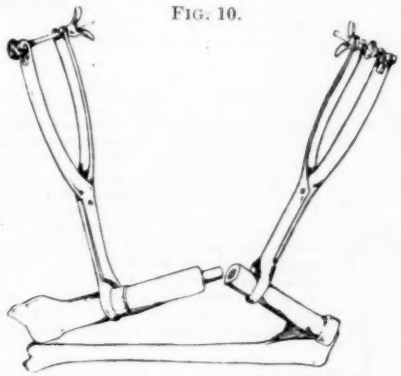
Fragments of radius (shown in Fig. 8) brought into alignment, both ends being drilled to receive the pegged ends of the graft.

danger of the latter being torn. All blood-vessels are picked up and tied with fine catgut. Oozing from bone surfaces, if excessive, is controlled by the use of Horsley's wax. The utmost care is taken to close the wound in layers, so that the bone may be well buried in muscle, and this in turn covered by fascia and skin. The more deeply the bone is buried the less likely is it to be affected by secondary infection from the skin. Also deep suturing controls oozing and prevents "dead" spaces. When, in spite of all care, oozing is well marked a drain of silkworm gut is used and removed in 24 hours.

The Bones of the Forearm.

The following remarks apply for the most part to the radius. A loss of continuity in the ulna produces so little functional change, that it is questionable whether a grafting operation is justifiable for this defect. If, however, the ulna has to be repaired, the steps of the operation are similar to those undertaken for the radius. There are two operations which have been suggested for a gap fracture of one of the bones of the forearm when the other is intact, as alternatives to a tibial graft. If there is, for example, an inch gap in the radius, it has been suggested that the ulna should be shortened by rather more than 1 inch and united by some kind of a "step-cut" operation. In my opinion there is only one condition which justifies this procedure, and that is the loss of the flexor or extensor

FIG. 10.

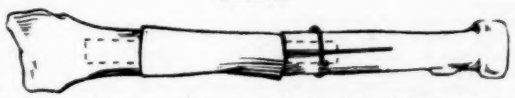


Graft being fitted into its bed by eversion of the fragments.

tendons at the site of fracture. Under these circumstances shortening the forearm will enable a restitution to be made of the tendons. If this operation is to succeed the shortening of the ulna must be carried out to such an extent as to allow of a free removal of the indolent ends of the radius, because if the latter are merely brought into apposition without refreshment

FIG. 11.

FIG. 12.



Gap fracture of the radius grafted from the tibia, showing one end of the radius split and wired.

non-union will certainly persist. The other operation which has been suggested, of which I have seen some examples, is the removal of a segment from the ulna and the implantation of this segment into the gap of the radius. This is much more difficult than the tibial graft described below, and it is subject to the great disadvantage that the firm splint provided by the intact ulna is lost.

The "cricket-bail" graft.—After trying various types of graft fixed to the surface of the fragments, with a varying degree of success, I have adopted the use of a graft shaped like a cricket-bail, cut from the crest of the patient's own tibia, and this has given such successful results that I now use it always for mending gap fractures of the forearm bones. The bed for the graft is first prepared by exposing the fractured ends of the bone, freely cutting away the irregular or conical ends, while exposing or baring their surfaces as little as possible.

Each fragment is bluntly separated from the adjacent bone when tied down by adhesions of the interosseous membrane. The fragments should be mobilised freely enough to allow of the end of each being brought well up into the wound. This is not merely for convenience at the subsequent operation, but in order to separate the central parts of the shafts of the radius and ulna as widely as possible one from another. When this has been done each fragment is bored by as large a twist drill as can be driven into it easily—i.e., without cutting away anything more than soft marrow or friable

bone. The shaft of the radius usually admits of a ¼ to $\frac{5}{16}$ inch drill being employed for this purpose, but the lower end is considerably larger. In dealing with a fracture about 2 inches above the wrist it may be necessary to scoop out the cavity of the lower fragment by means of a small chisel into a hole oval in cross section ½ inch by ¼ inch. The actual size of the hole does not matter so long as a strong sound shell of bone is left into which the cricket-bail graft can be firmly driven.

The depth to which the ends are drilled is not very important; usually it should be about 1 to 1½ inches. Careful note is made of the length of the gap left after removal of the bone ends and of the size to which each marrow cavity has been drilled. The wound is packed and its edges brought together temporarily by towel clips.

FIG. 13.

Gap fracture of the lower end of the humerus.

The tibia is then exposed by a curved incision and a length 2 inches more than the gap to be filled marked by cutting transversely through the periosteum on its exposed surface. Longitudinal incisions are made through the periosteum along the extreme borders of this surface of the tibia and the periosteum is turned back from its inner border towards the crest, leaving a strip of bone about ½ inch wide, with the periosteum undisturbed. The graft is then cut by four saw cuts with an Albee saw, taking a piece of the crest 2 inches longer than the gap and of square section ½ inch each way. When the graft has been removed the assistant closes the wound in the leg, whilst the surgeon proceeds to shape the graft.

The periosteum is turned back for 1 inch from each end, the graft is wrapped in a piece of tetra cloth which leaves the end free for 1 inch, and placed in a small vice. The bare end is cut down by the Albee saw to something near the size of the marrow hole it has to fit. The angles are then filed and the end is passed through the holes of a reaming plate, these holes corresponding to the size of the drill used. The other end of the graft having been treated in a similar manner there remains a piece of bone consisting of a central stout portion, the length of which corresponds to that of the gap in the radius, and two rounded ends, each 1 inch long, the thickness of which is that of the holes in the fragments. To the thick part of the graft a piece of periosteum is attached, with an abundant free margin laterally and at each end.

The wound over the radius is now reopened. The distal fragment of bone is grasped by a suitably curved bone-holding forceps and brought out into the wound. The graft is driven into this, and the projecting cuff of periosteum is sewn round the junction between the graft and the radius. Next comes the critical stage of the operation. The easiest and neatest way to insert the proximal peg of the graft is to lever outwards the proximal fragment of radius after cutting the peg to ½ inch in length. The graft is made to engage in the hole of the upper fragment and slowly the two are pressed back into alignment. (Figs. 8, 9, 10.) The peg slips into its place with a "click," and for the moment all is well, the periosteal cuff being treated as before. But though this is the neatest way of finishing the operation, it is open to one objection, which is that the upper peg is so short that it does not serve to keep the graft and upper fragment in alignment, and there is a tendency for the radius to "sag" inwards towards the ulna at this point.

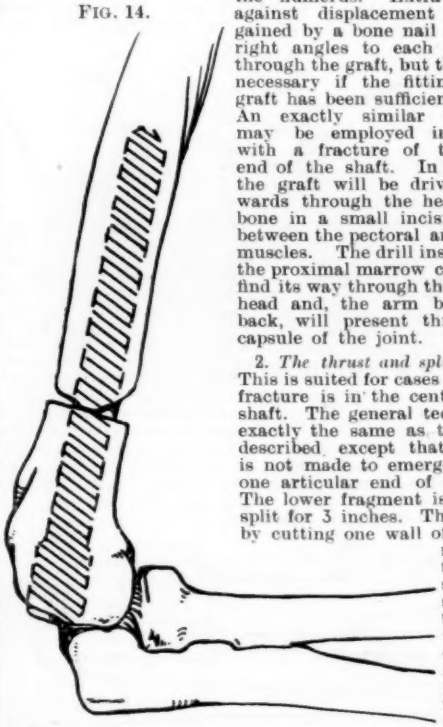
The more efficient way of completing the fitting of the graft is to split the proximal fragment of the radius by the motor-saw for 2 inches. (Fig. 11.) The split is then cautiously prised open and the peg end of the cricket-bail placed in position. The end of the radius is then tied together with a double turn of fine iron wire. (Fig. 12.)

The Humerus.

The humerus presents one of the most difficult problems of repair. Very special care is required in immobilisation, because if this is not done and the arm is left hanging by the side it will drag on the graft. Moreover, the shoulder-joint is apt to become very stiff and each movement of lifting or rotation of the arm puts a great strain on the graft and its fixation. Three types of graft-fixation may be used for the humerus which may be described as the thrust, the thrust and split, and the two-piece graft.

1. *The thrust graft.*—This graft is specially indicated for cases without much loss of substance, but in which there has been so much absorption atrophy that the ends are too fragile for a "step-cut" union. In principle it consists in nailing the two fragments together by means of a stout intra-medullary nail. Take, for example, the case shown in Figs. 13 and 14, where there has been a gap fracture at the lower end already treated without success by a plate. The region of the fracture is exposed by an incision over the external intermuscular septum. Each fragment is refreshed and the ends so shaped as to fit snugly against one another when the bone is aligned. Then each end is brought out into the wound and drilled for 3 inches by a twist drill, usually by one about ½ inch in diameter. The distal fragment is drilled last, and the elbow being acutely flexed the drill is thrust right through the elbow-joint and out of the skin. This external opening is temporarily plugged by a pair of artery forceps which serve to keep it patent. The graft is now prepared from the tibia unless a beef bone is being used. In either case the graft is 6 inches long and rather more than ½ inch thick, and roughly cylindrical in shape with one end slightly pointed. The pointed end of the graft is thrust into the opening at the tip of the elbow, the margins of which are held apart by four pairs of tissue forceps. It is then hammered into place. When its point has reached the gap of the fracture it is adjusted into the mouth of the marrow cavity of the proximal fragment, and the arm is brought into correct alignment with proper orientation as regards rotation of the forearm upon the arm. The graft is then hammered home until its lower end is clear of the condylar region of the humerus. Extra security against displacement may be gained by a bone nail driven at right angles to each fragment through the graft, but this is not necessary if the fitting of the graft has been sufficiently tight. An exactly similar technique may be employed in dealing with a fracture of the upper end of the shaft. In this case the graft will be driven downwards through the head of the bone in a small incision made between the pectoral and deltoid muscles. The drill inserted into the proximal marrow cavity will find its way through the humeral head and, the arm being held back, will present through the capsule of the joint.

FIG. 14.



The same case treated by means of a "thrust" graft.

2. *The thrust and split graft.*—This is suited for cases where the fracture is in the centre of the shaft. The general technique is exactly the same as that above described except that the drill is not made to emerge through one articular end of the bone. The lower fragment is carefully split for 3 inches. This is done by cutting one wall of the fragment by the motor-saw and splitting the deep wall by a chisel. It is very important not to bare this part of the bone by separating its covering of soft parts from it. The graft is then hammered into the proximal fragment for 3 inches and laid between the split halves of the distal fragment. These halves are then brought together and fixed by a double turn of soft iron wire.

In both these types of operation the graft is, of course, bare of periosteum, as it has to lie entirely buried in the marrow cavity of the humerus.

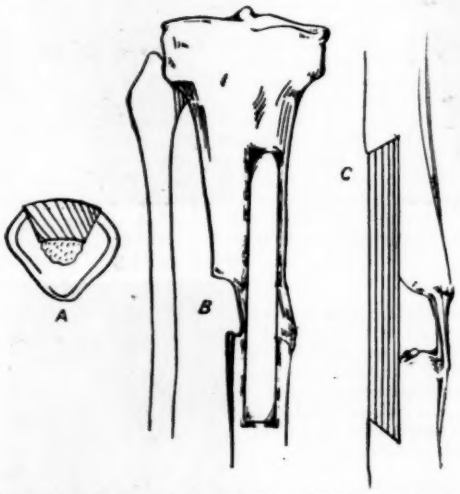
3. *The two-piece graft.*—If there has been such a great loss of substance of the bone that the two ends cannot be brought into apposition it will be necessary not only to fix the graft into each fragment, but also to bridge the gap in such a way as to give the best chance of new bone growth in this interval. Two grafts are taken; one is driven firmly into each fragment and the two grafts are then united to one another in the gap by bolts or wire. In a gunshot fracture requiring an autogenous graft it is necessary to

cut two tibial grafts, or one long one which can be cut into two. Each has ample periosteum attached to it. The periosteum is turned back from the end driven into the marrow cavity, and this membrane is then wrapped round the line of junction between fragment and graft. The two grafts being united by two bolts or wires, there will be a double thickness of graft in the gap, and this will be entirely covered in periosteum.

The Tibia.

The tibia presents special difficulties of its own. The bone is to a greater extent than any other long bone subcutaneous, and this means that scars of wounds are usually adherent to, or are immediately over, the seat of fracture. Further, in adults the bone is dense and avascular, and not suitable for rapid callus repair. Two separate conditions require consideration; firstly, an ununited fracture without much loss of substance, and, secondly, a typical gap fracture.

FIG. 15.



Gap fracture of the tibia united by an "inlay" graft (B). At A and C are shown the section and side elevation of the graft.

1. *Fracture without loss of substance* (Fig. 15).—It is here more absolutely essential than anywhere else to replace all scars by healthy skin, so as to leave no cicatricial tissue over the seat of operation. At a suitable period after this has been done the bone is exposed by a long curved flap. Two aluminium templates are used to measure the graft and the bed in which it is to lie. These measure 6 by $\frac{1}{2}$ inch and $6\frac{1}{2}$ by $\frac{5}{16}$ inch respectively, the longer and wider one being used as a guide in cutting the graft, whilst the smaller is for the bed. Each template is provided with four small holes for tacks, the plate being temporarily nailed in place whilst the motor-saw cuts along its edges. The fractured bone being exposed, the periosteum is raised from an area $6\frac{1}{2}$ inches long in the middle of the anterior surface by a central longitudinal incision and cross cuts at each end, two flaps being turned aside. The smaller template is fixed in position, and the bone underlying it cut out by four saw cuts. The lateral saw cuts converge towards the axis of the bone, the end cuts undercut the bone, whilst all go deep enough to penetrate the marrow cavity. By means of a chisel the bits of bone thus marked out are raised from the bed, and a cavity for the graft is left. The graft is cut from the opposite tibia. In this case the periosteum is cut by a rectangular incision $\frac{1}{4}$ inch wider and longer than the graft and turned inwards. The periosteum so conserved is protected by the template nailed in position, and the graft is cut. If the ends have been properly undercut it will be necessary to remove a wedge-shaped piece of bone at one end in order to free the graft, which is then raised by a chisel, with the template still attached. The graft is then placed in its bed. The width of graft and bed ought to correspond exactly, because the wider template used as a gauge for the former allows for the bed being two saw thicknesses wider than the smaller template. The shape of the ends is such that the deep surface of the graft is longer than the superficial. By traction on the leg the length of the bed for the graft is temporarily lengthened, the graft is then hammered down into position, and the two parts of the tibia are forced together so as to lock the graft in position. The edges of periosteum of the bed are then sewn to those of the graft, and the skin flap is closed.

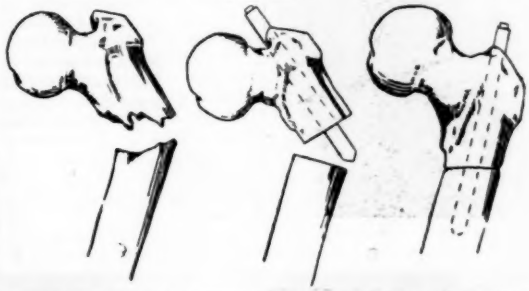
2. *The gap fracture.*—If a gap of 1 or 2 inches exists in the tibia the choice will lie between shortening the fibula, so as to bring the tibial fragments into contact, and filling the gap by a graft. If the gap is more than 2 inches a graft is the only alternative to amputation. The best type of graft to use for such a long gap is a homogenous one taken from a clean fresh amputation, if such be available. The graft should be prepared, with its periosteum in place and a projecting cuff to cover the line of junction between graft and fragments. Two projecting tongues of bone are cut at each end of the graft and fitted into corresponding slots in the fragments.

The Femur.

In the case of a large gap in the femur, involving more than 3 inches of shortening of the leg, it is generally wisest to advise amputation, because in such cases there is usually much concurrent injury to muscles and nerves and the leg as a whole is much atrophied. Practically every ununited fracture of the femur must be joined with end-to-end apposition of the fragments, as it is not possible in the adult to fill up a gap with a graft sufficiently firm to take the body-weight.

The thrust intra-medullary graft (Fig. 16).—For the shaft of the femur strong round pegs $\frac{1}{2}$, $\frac{5}{8}$, and $\frac{3}{4}$ inch thick and 6 inches long should be prepared from beef bone or ivory. It is very difficult to get a solid piece of beef bone more than $\frac{1}{2}$ inch thick, and I prefer ivory because of its greater strength. The site of the fracture is exposed, the ends brought out into the wound, refreshed and bored by drills up to $\frac{1}{2}$ inch in diameter. A special long drill is run up the proximal fragment until the tip of the great trochanter is pierced. A steel rod 12 inches long and $\frac{3}{4}$ inch thick, with a pin at its lower end fitting a hole in the upper end of the peg, is passed up the proximal fragment until it can be felt through the skin of the buttock, where it is cut down upon and thrust out. The peg is then fitted to the rod and driven up the femur until only $\frac{1}{4}$ inch is left projecting at the site of the fracture. The fragments of the fracture are adjusted and the peg is hammered down into the lower fragment until it lies equally in the two fragments. It is very important that the hole drilled in the fragments should be smaller than the size of the peg (a $\frac{1}{2}$ inch hole will suffice for a $\frac{5}{8}$ inch peg), the rarefied inner layers of the bone readily admit of a peg being forced into a small hole, and it will then be absolutely tight. If the fracture be at the upper end of the femur the peg can be inserted from the tip of the trochanter instead of being passed up the canal of the proximal fragment.

FIG. 16.



Ununited fracture of the upper end of the femur, showing insertion of peg into the upper fragment and driven down into the lower.

There are two situations in which a bone-graft may be used for a femoral fracture. One is in the neck and the other in the shaft. About the former operation it is not necessary to give details, because this has been long recognised as the best treatment for non-union of the neck. Only two points need be mentioned. One is that the site of the fracture should always be exposed by an anterior incision such as that used for excision of the hip-joint. This is necessary to secure correct orientation of the fragments and proper direction for the graft, and it also enables the operator to refresh the line of fracture by the removal of interposing fibrous tissue. The second is that, whether the graft be beef bone or fresh human tibia, it should be cut roughly square—a $\frac{1}{2}$ inch square—and driven into a $\frac{1}{2}$ inch round hole. The cancellous tissue permits of this quite readily, and a firmer union results than from the use of a round peg in a round hole.

Skiagrams Illustrating Different Stages of Treatment in Mr. Barrington-Ward's Case of Resection of Tibia (see opposite page).

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Descriptions of Illustrations.

FIG. 1.—Osteomyelitis of tibia before operation.

FIG. 2.—Diseased shaft resected; transplant in position, immediately after operation.

FIG. 3.—Growth of transplant two months after operation.

FIG. 4.—Growth of transplant five months after operation.

FIG. 5.—Fracture of graft 19 months after operation.

FIG 6.—Fracture plated.

FIG. 7.—Same fracture 3½ years later.

FIG. 8. — Photograph (Sept., 1919) 5½ years after original operation.

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NOTES ON A CASE OF
RESECTION OF TIBIA WITH GRAFTING.
WITH PLATING OF FRACTURED GRAFT.

BY L. E. BARRINGTON-WARD, CH.M., F.R.C.S. EDIN., F.R.C.S. ENG.,

SURGEON (IN CHARGE OF OUT-PATIENTS) TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, AND GREAT NORTHERN CENTRAL HOSPITAL.

IN the operative treatment of chronic osteomyelitis of a long bone two alternative lines of treatment are available. Chronic osteomyelitis is not here taken to mean the chronic condition resulting from the unsuccessful treatment of acute osteomyelitis, but quiet bone inflammation of staphylococcal, pneumococcal, or tuberculous origin. (These are, as a rule, indistinguishable clinically and radiographically, and in most cases can only be differentiated after bacteriological examination.) The oldest method is the simplest, the most generally used, and perhaps the least efficacious. An incision is made over the affected bone, the medullary cavity is opened up, diseased bone is removed by gouge and forceps until healthy limits are reached, the resulting cavity is disinfected thoroughly, the soft parts are brought together, and the wound is closed.

The second method has been most strongly advocated and developed by Stiles of Edinburgh. This is more radical, and the diseased shaft is removed entire. By appropriate splinting the limb is kept in good position, and in the course of time the diaphysis is reproduced in healthy bone.

The Method Used.

A third method is a modification and, I believe, an improvement on the simple resection. It consists in excision of the affected shaft through healthy limits and inserting a bone-graft—generally obtained from the tibia—into the gap so made. This transplant is cut to the exact length required, and is fashioned and fixed as an efficient internal splint, rendering unnecessary the subsequent use of cumbrous apparatus, and helping to some extent in the regeneration of bone. It is also possible that the fresh healthy bone cells of the graft may assist in dealing with any of the original infection—for example, of the periosteum—which has inadvertently or unavoidably been left behind.

Various grafts have been suggested—the tibia from a recently amputated leg, the fibula of the same patient. Such complications are unnecessary. A strip from the patient's healthy tibia fulfils all requirements, is easily cut with simple instruments, and has no ill-effects on the donor. It is not necessary to take periosteum with the graft. The true periosteum is a limiting membrane, and, provided the periosteal tube is left to receive the graft, the perfect shape of the bone will be reproduced. I have employed this method with complete success in treating osteomyelitis of the humerus, radius, ulna, and tibia. The following case illustrates the method in the case of the tibia, but it is recorded rather to show the behaviour of the graft under trying circumstances.

The patient, a girl aged 6, came under my care at the Hospital for Sick Children, Great Ormond-street, in March, 1914. She had a swelling of the middle third of the tibia, which had been noticed for a year. There was no history of injury. The Wassermann reaction was negative. X ray showed a dense osteitis of the shaft of the right tibia. At operation on April 2nd the sclerosed bone was opened up and an abscess cavity was found in the centre. The pus was sterile, and no tubercle bacilli could be found. The diseased bone was removed as far as possible, the cavity disinfected, and the wound closed without drainage. The wound healed satisfactorily, and progress was uninterrupted until July, 1914. A recrudescence of activity was then noticed, the bone becoming more swollen and tender. She was again admitted, and an operation was performed at a demonstration before the American Congress of Surgeons.

The original scar was excised and about 6 inches of the tibial shaft, including all the diseased bone, was resected subperiosteally. The medullary cavity at each end was reamed out and careful measurements were taken. A graft was then cut of the required length and size from the normal tibia and shaped to fit the gap exactly. Each end of the graft was rammed firmly into the reamed out medullary cavity, a shoulder being fashioned at either end to ensure correct length. The wounds were closed and the leg put in plaster. X rays from time to time showed the good progress of the transplant. It would seem that growth was taking place chiefly from the cut ends of bone along the scaffold graft. By February, 1916, the patient was walking about without a splint. In March, 1916, she fell over a railing and snapped the graft across. She was readmitted to hospital and the fracture was accurately set by open operation and plated by Lane's method. Subsequent history was uneventful. She was allowed to walk freely four months later. When last examined (September, 1919) she had a normal right leg, equal in length, size, and strength to the left, and perfect function.

Remarks.

This case illustrates some interesting points in the question of bone regeneration. The opportunity was taken when the fractured graft was plated to make a careful examination of the twenty-month-old transplant. The graft was tapered from either end and had broken at its thinnest part—the middle. It would seem that most of the growth had taken place at the ends, and that bone had grown down and up along the graft. There was no evidence yet of a medullary cavity. The texture of the bone was firm and the screws gripped well. In the growth of the transplant since the plating the plate has remained on the surface, showing that the increased thickness was not due to deposition of bone by the periosteum.

The fracture, as is usual with plated fractures, healed without external callus. The last X ray, five and a half years after the original operation, showed perfect reproduction of the shaft with restoration of the medullary cavity and no trace of graft or fracture.

A CLINICAL STUDY OF
INFECTIONS OF THE HAND.

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LITTLE has been written in English publications on this important subject, which has, however, been reviewed very completely in America by Kanavel—an author too little known in this country. This investigation has been made in order to show how the graver hand infections commence and to ascertain whether these severe lesions are preventable by early appropriate treatment. As certain facts have been observed which, though not bearing directly upon this matter, may be of interest, the paper has developed into a brief account of infections of the hand as seen in those who earn their living with their hands. Every available case, trivial or otherwise, was seen, notes were kept, and treatment was either supervised or carried out by the writer; the severer cases were admitted to beds which were under his direct observation. I should like to compare the results in this series of cases with those obtained among the nursing staff of a large institution, where cases report sick early, and consequently get early and thorough treatment.

Anatomy.

In order that the descriptions of fascial space infections may be understood the briefest possible account of the anatomy is given, as this is not well described in text-books of anatomy. Those who wish will find an extremely full account in Kanavel's "Infections of the Hand."

There are six well-defined spaces which are liable to become infected.

1. Dorsal subcutaneous. 2. Dorsal subaponeurotic. These two spaces on the dorsum of the hand and fingers are sufficiently well described by their names.

3. The middle palmar space. This lies deep to the flexor tendons and superficial to the metacarpals and interossei; it is limited on its radial side by a layer of fascia at the level of the third metacarpal bone. It is

liable to become infected from the tendon sheaths of the third, fourth, and fifth digits, or by the lymphatics, and can best be drained through an incision into the distal part of the third or fourth intermetacarpal spaces, thence by Hilton's method.

4. The thenar space. This lies between the adductores pollicis and the superficial thenar muscles, it is separated from the middle palmar space by the layer of fascia mentioned above. It is liable to become infected from the index, rarely from the middle, and still more rarely from the thumb flexor sheaths, or by lymphatic spread. It is best drained by an incision parallel and dorsal to the web in the first interosseous space; from here a pair of pressure forceps are thrust in the direction of the base of the first metacarpal bone.

5. The lumbrical spaces, of which there are four. These form a channel from the flexor profundus tendons in the palm to the radial sides of the dorsum of their respective digits. They normally convey the lumbrical muscles, but not infrequently convey pus to the dorsal part of the web. They are best drained by short deep incisions into the palmar part of the web; this incision, if necessary, may divide the web without causing disability.

6. The hypothenar space. This is superficial and of little importance.

Treatment.

The moment that the presence and site of pus has been diagnosed free drainage must be provided. Fluctuation is a late sign of suppuration as met with in the hand; it should never be waited for. The site of maximum tenderness is of far greater value in estimating the site of pus than the site of maximum swelling. Tubes, gauze strips, and strips of rubber are unsatisfactory as means of promoting drainage; they often hinder it, and, in addition, encourage sloughing of the tissues. Large incisions which gape save time in the end by giving free drainage without the introduction of foreign bodies. With free incisions the nature and the frequency of dressings matter very little. Fomentations were nearly abandoned with, it was thought, a marked improvement in results; the solitary advantage—that of relieving pain—is short-lived, and is outweighed by the many disadvantages which include cross infection, sodden hands, and, worst of all, the fact that the use of fomentations is too often the substitute for efficient drainage. It was observed that cases did not need frequent changes of dressings. A voluminous gauze dressing is much more absorbent than a wet dressing, and sometimes a case which had no attention for several days did just as well under its pus-soaked dressing as cases which had had daily dressings. This only applies to cases where drainage is really free.

Hypertonic saline baths were certainly beneficial.

Case Grouping.

The cases fall most naturally into the following groups:—

Group I.—(1) Perionychia (infections around the nail); (2) abscess in the pulp of the finger; (3) abscess on the palmar aspect of hand and fingers. These three constitute the most important primary infections.

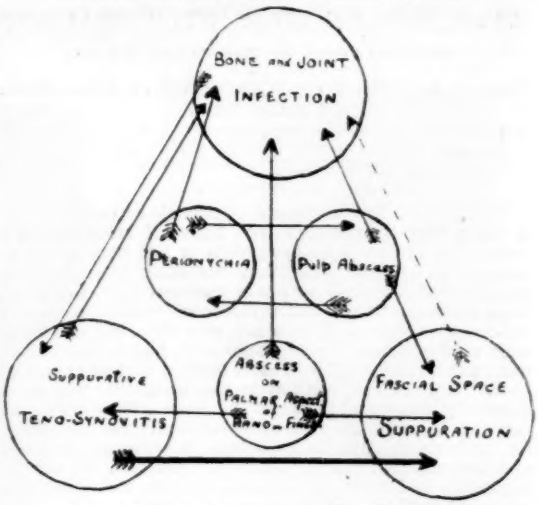
Group II.—(4) Suppurative tenosynovitis; (5) bone and joint infections; (6) fascial space abscess in palm and forearm. These constitute the most important grave secondary infections.

Group III.—(7) Abscess on the dorsum of the hand and fingers; (8) "carbuncular infections"; (9) trivial infections (chiefly subcuticular abscess); (10) lymphangitis and glandular abscess; (11) cellulitis.

The lesions in Group I., whilst remaining in that group, are relatively trivial; but they readily give rise to the Group II. infections, which are responsible for nearly all the cases of severe crippling.

The possible modes of spread are indicated by the arrows in the following diagram. Group II. infections are rarely primary; severe crushing injuries seem more prone to give rise to the cellulitis type of infection than to the clear-cut infections with which we are mainly concerned here.

Diagram showing Possible Modes of Spread.



——> = Common. - - - -> = Uncommon.

Perionychia.

Number of cases	30	
Average number of days disabled	7·4 days.	
Pus present when first seen	28 cases	= 93·0%
Pus under the nail	19 ,,	= 63·0%
Necrosis of bone	2 ,,	= 6·6%
Pulp abscess	5 ,,	= 16·6%
Tenosynovitis	0 ,,	= 0·0%
Source—Splinters, needle pricks, &c.		43·0%
,, Uncertain (probably cracks in skin)		57·0%

Perionychia is thus not a very prolific source of grave infections—it is a possible cause of any of the three graver infections, but the chief serious complication is undoubtedly infection of the terminal phalanx.

Treatment.—Gas anæsthesia is necessary for efficient treatment. The whole nail should not be removed unless it is completely undermined by pus. In early cases, in which there is no pus under the nail, the best operation has been to make a series of about five short deep incisions radiating from the nail base. (Fig. 1.)

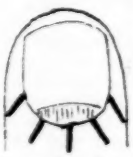


FIG. 1.—Operation for perionychia where there is no pus under the nail. Five short deep incisions radiating from the nail base.

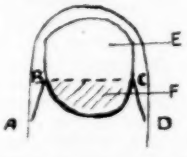


FIG. 2.—Kanavel's operation for perionychia where the nail is undermined by pus at its base. E, Portion of nail retained. F, Portion of nail removed.

In cases where the nail is undermined by pus at its base the operation described by Kanavel has given extremely satisfactory results. A flap, A, B, C, D, is dissected back, the base of the nail is divided with scissors along the line B, C, and the proximal portion is removed. The old nail, or rather its remnant, still exercises its protective function whilst the new nail is growing. (Fig. 2.) In extensive cases the whole nail must be removed, involving a longer period of disablement.

Abscess in the Pulp of the Finger.

The dense fibro-fatty tissues of the pulp have a close connexion with the periosteum of the terminal phalanx; this was attributed by Kanavel to the fact that here the glands of the skin penetrate as far as the periosteum. Infection of the terminal phalanx is the chief complication to be feared in this condition. Acute tenderness with induration of the pulp are sufficient

signs of abscess, and fluctuation should not be waited for. Directions of spread: (1) To the terminal phalanx; (2) to the nail bed; (3) to the flexor sheath; (4) by lymphatic spread to the hand, forearm, arm, and axilla.

Treatment.—Incision to be efficient requires gas anæsthesia. The incision should be made at the side to avoid a scar where tactile sensation is most important and should be long enough to gape.

Number of cases	37
Average duration of disablement	11·5 days.
Average duration of disablement in uncomplicated cases	6·0 ,,

Abscess on the Palmar Aspect of the Hand and Fingers.

This group of cases showed what appeared to be the commonest mode of infection of the flexor synovial sheaths, and it is in this group that early thorough treatment will save many hands from becoming crippled.

Source of infection.—Superficial cuts, needle-pricks, splinters, and, most common of all, infection occurring under a corn or wart. The two strikingly common sites were: (1) the "rowing blister area" in front of the heads of the metacarpals (15 cases); (2) the palmar aspect of the fingers.

The first group of the above infections may spread: (*a*) towards the base of the flexor synovial sheath (14 cases); (*b*) towards the lumbrical spaces (forming the "collar-button" abscess) (5 cases); (*c*) towards the middle palmar and thenar spaces (1 case).

The second group of infections may spread (*a*) towards the flexor synovial sheath; (*b*) towards the spaces on the dorsum of the finger.

Number of cases	35
Average period of incapacity	9 days.

Three cases had involved but had not perforated the flexor sheath, which seems for a time to offer a barrier to the spread of infection. These cases all healed rapidly when drainage was established.

Diagnosis.—The symptom is throbbing pain. The signs may resemble very closely those of tendon-sheath infection. Flexion of the finger, pain on movement, swelling of the finger, and tenderness over the sheath may all be present, and the degree to which they are elicited varies with the patient's stoicism. A good guess can usually be made, but it is only a guess, and requires to be confirmed by careful exploration.

Treatment.—These cases require general anæsthesia (gas and oxygen is ideal); a tourniquet is necessary and an Esmarch bandage is an additional convenience. Open at the site of infection, follow the pus to all its pockets, and make sure of free drainage; if necessary, divide the web completely. If swelling of the sheath or the discovery of a communication between abscess and sheath show the existence of tenosynovitis the sheath must be opened. This type of hand infection is both common and important; in one or another of its forms it is responsible for more than 50 per cent. of the cases of suppurative tenosynovitis in the present series of cases. Every stage between a simple subcutaneous abscess and one that involves tendon sheath, fascial spaces, and bones and joints will be seen if cases are carefully explored in a bloodless field. If freely drained at an early stage the results are excellent.

Suppurative Tenosynovitis.

Number of cases	16
Cases developing the complication of fascial space abscess (thenar space, 2; middle palmar space, 2; lumbrical space, 5; dorsal spaces, 6).	8
Infection of other sheaths	4
Bone and joint infection	4

Cause.

Wound of sheath	0
Pulp abscess (2 by way of necrosis of phalanx).	4
Abscess on palmar aspect (4 of these were due to superficial wound over interphalangeal joint).	10
Undetermined	2

Bacteriology.

Streptococcus pyogenes	8
Staphylococcus aureus	6
Mixed staph. and strep.	1
Undetermined	1

Tenosynovitis of this type is rarely or never a primary disease. There is always a preceding infection. This primary infection has been most commonly an abscess on the palmar aspect of the hand or of a phalanx. In 4 of the cases a superficial wound over one of the flexion creases led to infection of the sheath.

Pulp abscess is also a common cause, which may act in two ways: 1. Direct infection of the terminal portion of the sheath. 2. Infection of the phalanx and from this infection of the sheath (2 cases).

Perionychia did not cause any case of tenosynovitis in this series of cases, but since it may be the cause of either bone infection or pulp abscess it must be reckoned as a possible cause.

The outstanding complication of tendon-sheath infection is undoubtedly fascial space abscess, with which must be included direct spread into the forearm under the anterior annular ligament. This latter occurs in two ways: 1. Empyema of the synovial sac, which surrounds the flexor tendons in the palm; this sac consists of two divisions, an ulnar bursa communicating generally with the fifth flexor sheath and a radial bursa, or the sheath of the flexor longus pollicis. 2. Middle palmar space abscess extending deep to the synovial sheath into the forearm. The first of these usually ruptures at the upper end of the bursa and so infects the same space in the forearm as the second. Abscess in the forearm occurred in three cases.

Diagnosis.—The physical signs upon which a diagnosis of sheath suppuration is made are: (1) the general condition of the patient; (2) the combination of swelling and flexion of the whole digit; (3) pain on movement, particularly on extension; (4) exquisite tenderness over the sheath; (5) most important of all, a careful exploration of the site of infection.

Treatment.—General anæsthetic and tourniquet. Open at the site of infection; this allows of the differentiation from palmar subcutaneous abscess in all cases. The question of the amount to which the sheath should be opened is still one for discussion. The two chief views are: 1. Open the sheath in its full length. This is what has been done in the majority of cases in this series. Drainage is as free as possible, and the tendon does not necessarily slough. 2. Open the sheath laterally over the phalanges, leaving the portions over the joints. This certainly prevents prolapse of the tendon; but this undesirable event can also be prevented by splinting the finger in extension. When the tendon has a dull yellow appearance it will surely slough: much time can then be saved by excising it. If the tendon is merely cut off the infected upper end will retract into the palm and will there cause a secondary abscess: a better plan is to fix both tendons to the periosteum of the proximal phalanx by a stitch which holds until protective adhesions are formed.

It is most important to move all the fingers daily during the after-treatment.

One observation is of some interest in this connexion. There appears to be a type of low-grade infection which, when one sheath is involved in an acute suppuration, occurs in other sheaths: pus is not formed, but adhesions develop which limit the movements of the other fingers. This was well shown in a dissection of the amputated limb in one case. On clinical grounds the presence of pus in two sheaths had been suspected. The patient's general condition demanded amputation. On dissecting the fresh specimen many recent adhesions but no pus were found. The same clinical suspicion has arisen in other cases, but no opportunity for verification has arisen. The limitation of movement remains as evidence that adhesions had occurred.

Bone and Joint Infection.

This condition must be distinguished from osteomyelitis of the bones in the hand, which is part of a staphylococcal septico-pyæmia. The bone infection referred to here appears to run a different clinical course; abscesses of a metastatic nature have not been met with, the condition is not confined to young subjects, it is always the result of direct extension of the inflammatory process.

Number of cases	17		
Cause.			
Pulp abscess	8	Perionychia	4
Tenosynovitis	4	Undetermined	1

Tenosynovitis was responsible for the cases which involved the proximal phalanges and joints.

Treatment is unsatisfactory; in the majority of cases necrosis of the whole, or nearly the whole, phalanx occurs, and the fact that 5 out of 17 cases were eventually amputated shows that the condition is one which leads to severe and crippling deformity. Very early cases which have a subperiosteal abscess may clear up without necrosis of bone if freely incised at once. This condition—primary subperiosteal abscess—was met with in one case only. The large majority of bone infections are secondary to an infection which is at first easily treated, but which, if neglected, leads to inevitable deformity.

Abscess on the Dorsum of the Hand and Fingers; Fascial Space Abscess in the Hand and Forearm.

Abscess on the dorsum occurred: (1) as a complication of tendon-sheath or bone infection; (2) as a result of a wound on the dorsum of the hand. Infections on the dorsum extend to the lymphatics and glands more often than do the palmar infections. On the other hand, it is the palmar infections which cause great local damage. Dorsal infections cause severe disability only when they result in spreading cellulitis. The treatment is free incision.

Fascial space abscesses.—(A) Middle palmar space: This space was infected in two cases, both from a tenosynovitis of the middle finger, and both spread deep to the flexor tendons into the forearm.

Diagnosis.—The sign described by Kanavel, which consists of swelling of the whole hand as compared with its fellow, is not sufficiently sharply defined to make for early diagnosis. It is better to depend on careful exploration of the site of infection. If, for example, during an operation for tenosynovitis of the middle finger pus is observed to be tracking deep to the tendons on the ulnar side of the hand, this opening must be enlarged and the middle palmar space freely drained. The habit of making every operation for an infected hand partake of the nature of an exploratory dissection is one which makes accurate diagnosis available for every case.

(B) Thenar space: This space was infected in four cases: (*a*) index tenosynovitis; (*b*) flexor longus pollicis tenosynovitis; (*c*) middle-finger tenosynovitis; (*d*) spread from a pulp abscess of the thumb, possibly by the lymphatics.

Diagnosis.—The sign described by Kanavel, which he calls "ballooning of the thenar eminence," is very characteristic of the condition seen.

(C) *Lumbrical spaces.*—These became infected in two ways: (*a*) as a complication of tendon-sheath suppuration; (*b*) as an extension from an abscess under the horny skin of the palm. Abscesses in this situation spread to the dorsum of the web and usually healed readily on being freely drained in the manner previously indicated.

(D) *Abscess in the forearm.*—This can arise in two ways: (*a*) by rupture of a palmar bursa suppuration (first or fifth finger tenosynovitis at the upper end, above the annular ligament); (*b*) by spread of a middle palmar space abscess deep to the flexor tendons. In each case the same space in the forearm is affected, a space limited above by the attachment of the flexor profundus digitorum to the ulna. The abscess points at the ulnar side of the forearm about its middle, and it is here that it should be opened.

Fascial space abscess is later in its ætiology than its two companions in Group II. It is to be regarded rather as a complication of tendon-sheath suppuration than as a complication of the three early conditions in Group I.

Carbuncular and Trivial Infections; Lymphangitis and Glandular Abscess.

Carbuncular infections occurred only on the dorsum of the hand or fingers where hair follicles were present. They appeared to do as well when treated by fomentations and a stock staphylococcal vaccine as they did when incised. Excision left a wound which took long to heal.

There were 28 cases of trivial infections, of which 26 were subcuticular abscesses. No anæsthetic was required unless a deeper infection was present as well. The covering dead cuticle should be entirely removed; if this is done healing should not occupy more than a few days.

Lymphangitis and glandular abscesses were far more common where the primary focus was situated on the dorsum of the hand or fingers. Cases of lymphangitis generally resolve when the primary focus is treated, and the same is true of enlarged glands; but when there is is evidence of suppuration adequate incision must be made.

The established treatment of cellulitis by multiple incisions is not altogether satisfactory. In cases where pus is evacuated by this means the results are good, but it is in the severe cases where only brawny œdematous areas are exposed that the results of incision are least satisfactory. It seems to be better treatment to place the part at rest and apply fomentations until it localises into one or more abscesses, which are then opened in the most dependent position.

Conclusions.

The analysis of the 168 cases which form the basis of this paper shows that hand infections as seen in working men and women are too frequently the cause of grave disability. It was very unusual for a case to develop a severe infection if it had been first seen whilst it was in the Group I. stage.

Part of the blame must be attributed to the prevalent impression in the minds of the lay public—and it is to be feared in the minds of some members of the medical profession—that a "whitlow" is a suitable object for treatment with poultices, ink, ointment—in fact, anything but free drainage. The time to treat these conditions efficiently is in their early stages. When tendon sheaths, &c., have become infected the hope of a useful finger is a thing of the past; the object of treatment then becomes to save whole hands, forearms, and even lives.

The outlook of the public and the profession towards hands is much the same as it was towards the appendix 20 years ago. If localised tenderness became the danger-signal in the hand, as it has become in the abdomen, and if suppuration in the hand, however small the area involved, were regarded as an indication for immediate operation the morbidity of infected hands would fall in much the same way as the mortality of infected appendices has fallen.

Several factors combine to retard progress in this form of industrial disease. Not least amongst these is the fact that the public and the politician are each obsessed with the idea that all diseases can be treated with something out of a bottle. So we have elaborate schemes of State insurance, which do not consider the fact that the general practitioner can have neither the time nor the facilities, such as anæsthetics, for treating many of these cases.

I wish to thank the surgeons to out-patients of the London Hospital for permission to see and make use of their cases, and particularly Mr. A. J. Walton for valued suggestions and advice.

It would be impossible to write on infected hands without trespassing on Kanavel's work; my excuse for having done so is that his book is only obtainable from America. In two items only can I make any claim to originality: (1) The view of palmar abscess as the commonest cause of tenosynovitis; (2) the method of securing the proximal end of the tendon to the proximal phalanx before excising it.

DUBLIN UNIVERSITY BIOLOGICAL ASSOCIATION: ANNUAL DINNER.—The annual dinner of the Dublin University Biological Association—in suspense since 1914—was held last week in the Gresham Hotel under the presidency of Dr. Bethel Solomons. Over 100 members attended, and a very pleasant evening was passed. The principal guests present were the President of the Royal College of Physicians, Major-General J. J. Gerrard, and Sir John Lumsden.

SPECIFICITY AND EVOLUTION IN DISEASE:

A HISTORICAL RETROSPECT.

BY SIR WILLIAM JOB COLLINS, K.C.V.O., M.S., M.D., B.Sc. LOND., F.R.C.S. ENG.

THE LANCET of May 14th, 1881, published a letter in which I ventured to inquire "how far our commonly accepted notions of specificity of diseases should be modified by the doctrine of evolution." I then said:—

"This doctrine, which has so rapidly and entirely altered the face of the organic world, as we conceive it, has as yet made but a feeble impression, if any, on medical science and pathology. The importance of the principle of specificity in disease has been clearly and generally recognised since the time of Laennec and Bretonneau. Trousseau, in one of his clinics devoted to the subject, remarks of specificity; 'Elle domine toute la pathologie, toute la thérapeutique; en un mot toute la médecine'; and the same belief, tacit or avowed, would seem to pervade all modern medical literature."

I then went on to show that the argument upon which medical writers based their theory of specificity of disease was an appeal to the analogy alleged to exist between the natural history of diseases and the natural history of animals and plants, and that until that time no better argument had been possible. I then inquired whether—

"Since, as regards the organic world, we have come to speak of an origin of species, and learnt to trace their differentiation under the influence of evolution to the eventual survival of the fittest, should not our views concerning specificity of diseases undergo a similar modification? Is not the theory of specificity swallowed up in the larger theory of evolution? ..... Starting from a non-specific inflammation or fever, may there not arise therefrom under favourable conditions an inflammation or a fever different from the parent stock and capable of reproducing itself? I think so," and the letter concluded, "The common ancestry of specific diseases, once recognised, would do much to remove the hard-and-fast line so often drawn between disease and disease in text-books and dissertations, but of which nature knows nothing."

On Feb. 28th, 1884, I developed the thesis more fully in an address delivered at the Abernethian Society of St. Bartholomew's Hospital. This address was subsequently published by Messrs. H. K. Lewis, and was entitled, "Specificity and Evolution in Disease." Mr. Herbert Spencer was so good as to accept its dedication to himself, and wrote that "its conception is thoroughly philosophical and promises to open the way to a considerable reform in pathology." In this essay an attempt was made to show how pathology had been hitherto uninfluenced by evolution; the creed and canons of specificity were examined, and damaging admissions cited; the specificising influence of soil and predisposition were dwelt on, and the de novo origin of disease, variation, hybrids, and nondescripts discussed; the germ theory was viewed in the light of evolution, and certain objections on behalf of bacteriological pan-spermists were rebutted. The argument was thus summarised:—

"Starting from *common ancestral conditions*, we arrive at *specific diversities*, and that the chief, if not the only, element in determining specificity is the *nature of the soil*, in which the poison (whatever be its nature) grows, that is to say the *predisposition of the individual*. That the predisposition varies with the departure from a state of health, local or constitutional, but that just as in some cases so great is the virulence of the poison *as the result of cultivation on suitable soil*, that it may even overstep the usually sufficient barriers of health and attack the unpredisposed, so, on the other hand, predisposing and exciting causes being, as it were, complementary, predisposition may be so strong that, apart from contagion, it may develop disease *de novo*. Such disease, however, as with nascent species generally, being more plastic, less fixed than the more cultured variety, and often appearing in aberrant form."

The same principle, it was suggested, might be applied to local inflammations.

"The evolution of specific local lesions from the different stages of a common or simple inflammation, as, for instance, the various classes of skin diseases, erythemata, papulæ, vesiculæ, pustulæ, and squamæ, from the stages of redness, pimple, blister, pock, and scab of inflammation; and likewise the ætiology of carcinoma, sarcoma, and the specific lesions of syphilis, &c., from ancestral common types." The essay closed on a therapeutic or hygienic note claiming that "filthy conditions and the imperfect removal of effete material, without and within the body, are the factors of zymotic pestilence, which aforetime walked in darkness, but is now made plain by the revealing light of science. And just as the evolution theory of disease asserts the origin of disease so does it foresee the possibility of its abolition, at any rate so far as zymotics are concerned, while it was an integral part of the old specific theory to affirm that disease was from everlasting to everlasting, as it was in the beginning it is now and ever shall be, and that salvation could only be purchased by the propitiating influence of a previous attack."

This was in harmony with the plea for "extended sanitation, for the means of fighting diseases outside our bodies and not within them, for making our hygiene so good that prophylactics and antiseptics shall be superfluous," which I had argued in THE LANCET of Nov. 16th, 1880.

My innocent enthusiasm for evolutionary pathology as a corrective of the rigid doctrine of specificity, however, came under severe censure from the reviewers. The *London Medical Record* (August 15th, 1884) declared:—

"Such teaching runs counter to all the best work of modern times, which has carefully distinguished many of these forms of disease from one another or from others with which they were confounded."

The *Medical Press* (May 14th, 1884) accused me of—

"essaying with all the vigour of youth to demolish the theories of specific disease which have sufficed to satisfy the acutest physicians of this and every age," and discovered in the essay a "proneness to jump over those terrible gaps which everywhere occur to separate the known from the unknown."

While saying many kind things, which I forbear to quote, the reviewer regrets to find—

"evidence of generalisations which, when the author has reached the experience of the authorities whose opinion he condemns, he will be less eager to adopt."

Impenitent and unabashed by this orthodox rebuke from pontifical seniority, I again raised the question of "specificity and evolution in disease" at a conference of medical officers of health held in the Guildhall, Worcester, on Sept. 26th, 1889.[1] Wallace's "Darwinism" had just been published, and alluding to it I remarked:—

"It has been the work of Charles Darwin and of Alfred Russell Wallace to alter the face of organic nature as we conceive it, and to give us truer and finer conceptions alike in ontology and biology. It is the object of this paper to inquire, as I inquired eight years ago, Has the science of medicine, as we are pleased to term it, reaped the full benefit of these new conceptions? A small and increasing number of philosophic pathologists has doubtless essayed to bring the quickening influence of evolution to bear upon the dry facts which for centuries have been accumulated with such an infinity of labour and prolixity and such a modicum of insight and synthetic thought. We have but to take up any ordinary text-book of medicine to find that such underlying scientific conceptions as it may happen to include are but a dim reflex of the fossilised biological notions which did duty before Darwin's day. The old, absolute, unalterable, and eternal specificity theory is there in all its crude inconceivability and its theological attire."

The alternative evolutionary thesis was then re-stated, the predominant position of the germ hypothesis as affording an obstacle to the acceptance thereof, and the basis of orthodox criticism of evolutionary pathology were examined.

"Micro-organisms," it was contended, "have come to be regarded too much in the light of their relation to diseases of man and too little in the light of their own life-history: the old notion of a specific organism or entity as the *vera causa* of disease commends itself to acceptance if only on the score of its simplicity and easy comprehensibility. The *raison d'être* of fission fungi in the minds of some pan-spermists would appear to be the infliction on mortals of exanthematic disease, for such purpose they hold they are and were created. Whereas I apprehend the truer view to be that it is just so far as living tissues under certain conditions afford suitable soil for their growth and multiplication that there is any relationship between the two; and it is only by the results of their presence and growth, facilitated by the means of absorption and distribution which the mechanism of the living body provides that they come to be really pathogenic. ..... In cases where a micro-organism is habitually present it may be questioned whether its pathogenic *modus operandi* may not be merely to facilitate a chemical change which may be effected without it, as we know may occur in normal digestive processes."

It was submitted that the facts related

"do not warrant our insisting that the acceptance, within limits, of the bacterial hypothesis for certain diseases implies a strict acquiescence in the truth of a rigid specificity ..... the dissemination of fission fungi may be rather epiphenomenal than of the nature of a predestinated cause. Again, since what may stand as a specific series of morbid phenomena may be determined by a chemical poison in which the bacilli which produced it are conspicuous by their absence, how far is their presence to be held a proximate cause in disease production? Lastly, inasmuch as soil may operate to the extent of nullification of the action of a bacillus which is uniformly fatal to another variety of the same species of animal, how great is the importance to be attributed to it as a factor in the propagation and modification of disease! ..... It is impossible at the present time to go further than to allow that the influence which makes for disease is in some instances associated with the growth of fission fungi in the body.

How vast and incomprehensible may be the potentiality vested in a minute morphological unit we know in the phenomena which follow the inter-action of ovum and spermatozoon; of the intimate nature of contagion we know but little more. Yet if it be true that in the life-history of the lowest of organic things lie the momentous influences which determine plagues and pestilences, it is reasonable to believe that in organisms whose cycle may be less than an hour, and whose rate of propagation is incalculable, evolution must be powerfully at work eventuating in the survival of those most fitted to their environment, and that in this as in other directions man's influence may modify natural selection, and by acting in accordance with law learn to conquer nature by submitting to her."

In the debate which followed Mr. Blyth, Dr. Bond, and Dr. Sykes had very complimentary things to say; the first-named, however, thought "the subject could be more profitably discussed in some 20 years hence than at the present time," the last-named remarked that "if Dr. Collins had done nothing more than to teach them they must not lay down any hard-and-fast rules he had done some good," while Dr. Bond dwelt on the "plasticity of the germ," and added that:

"The general result of his observations had been to lead him so strongly in the direction of what Dr. Collins had shadowed forth that he felt he had travelled altogether from the original ideas as to specificity which he entertained when he first undertook the work of a medical officer."

Dr. (now Sir Arthur) Newsholme wrote to *Public Health*[2] saying he had—

"read with great interest Dr. Collins's paper. It is an able exposition of the evolutionary view of the origin of febrile disease from an ancestral amœboid common fever, and puts in a lucid manner the arguments favouring this theory." Nevertheless, he added: "Carefully conducted and elaborate experiments in the bacteriological laboratory, made by quite a small army of observers, tend to throw great doubt on the present transition of any one known species of bacteria into any other. ..... It must be confessed that however much one may be theoretically inclined to agree with Dr. Collins's evolutionary views respecting infectious diseases, and in spite of the fact that he has presented his case in a very masterly fashion, the evidence hitherto available negatives the view that modification of form occurs, and leads one to think that it is chiefly and to all appearances solely a question of modification of soil."

At intervals during the 30 or 40 years which have elapsed since I first hazarded views that gave rise to such diversity of opinion I have, in the intervals of other activities, returned from time to time to this fascinating theme. Among such re-statements of the case were addresses at King's College, Feb. 14th, 1896, entitled, "Pasteur Notwithstanding"; at the Sanitary Institute Congress at Manchester, in 1902, in "the popular lecture" entitled, "The Man versus the Microbe"[3]; in a lecture to the Abernethian Society on "Physic and Metaphysic," Feb. 16th, 1905[4]; in the presidential introduction to the Section of Preventive Medicine at the Sanitary Congress at Bristol in 1906[5]; in an oration to the Reading Medical Society in 1909 on "The Tithing of Mint and Anise"; and in the lecture to the Congress of the Sanitary Institute at Exeter in 1913 entitled, "The Chadwick School of Thought, an appeal from the New Sanitarians to the Old."[6] I therein urged that accumulating evidence strengthened rather than weakened the original claims made on behalf of evolutionary pathology. In 1888 and 1904 letters entitled, "In What Does Cancer Consist"[7] and "Herbert Spencer and Evolutionary Pathology"[8] collateral topics were dealt with. Confirmation of the views which were accounted so preposterous and heretical by the early reviewers, sometimes unacknowledged[9] and sometimes acknowledged, has been abundantly forthcoming during the generation which has since elapsed. Thus Dr. T. W. Thompson, writing on "The Natural History of Infectious Diseases,"[10] referred to my essays of 1884 and 1889 and asserted that—

"Evolution in connexion with epidemic diseases, or more strictly their causes, is day by day forcing itself more prominently upon our consideration."

Dr. K. W. Millican, an early worker in the same field, wrote on "The Evolution of Morbid Germs."[11] Dr. (now Sir George) Newman, in 1904, in his work on Bacteriology,[12] spoke of the tendency to overrate altogether the potentiality of the bacillus apart from its medium, and of "the enormous part played by the medium or soil in which the micro-organism is growing." In sending me a copy of his book he said—

"I have tried to learn the lesson you used to emphasise—the relativity of bacteriology and its tentativeness. I have also used your ideas of seed and soil in Chapter I."

Dr. J. T. C. Nash, medical officer for the county of Norfolk and formerly of Southend, has from 1901 onwards emphasised and illustrated with great cogency "the part played by evolutionary forces in disease processes."[13] Dr. W. H. Hamer, medical officer to the London County Council, in his Milroy Lectures before the Royal College of Physicians of London, in 1906,[14] as well as in his brilliant annual reports, dwells on "the paramount importance of soil" upon specificity, and cites with approval my observation that "the possibilities of environment are not exhausted by the confectionery of the laboratory." In 1902 Dr. Howship Dickinson[15] and Dr. Stephen Mackenzie,[16] in addresses at St. George's Hospital and at the Medical Society, stressed the importance of paying more attention to the soil than to the seed in diseases attributed to microbic causes. In a critical annotation in the *Universal Medical Record* on "The Pathogenicity and Virulence of Bacteria,"[17] reference is made to the researches of Dr. F. H. Thiele and Dr. D. Embleton,[18] which it was alleged, if substantially confirmed, would cause the whole of the enormous superstructure that has been reared on the basis of the conventional bacteriology of the last 20 years or so to go by the board. The writer continues:—

"Views, although supported by clinical observation, which have been held heterodox, may now be brought out into the light of the day, and the importance of the man in respect of the microbe may perhaps be freely acknowledged."

and the Manchester address on "The Man versus the Microbe" of 1912 is cited in support of this contention. Sir Malcolm Morris,[19] in his introductory volume to Cassell's series of Public Health Manuals, says:—

"In the early days of bacteriology some sanitarians were slow to appreciate the rôle of pathogenic organisms. More recently the pendulum has sometimes swung too far to the other side, and Sir William Collins is not without justification for the epigrammatic warnings he has administered from time to time against the danger of underrating 'the potency of filth and removable conditions as factors in disease production and propagation.'"

In 1918 Professor J. G. Adami[20] published his "Medical Contributions to the Study of Evolution," recording views he had arrived at in orderly sequence from the year 1891, and maintained that—

"In studying these uni-cellular a-sexual bacteria, we investigate the simplest and most fundamental principles of heredity and evolution, and the influence of environment becomes most evident," and "that to a variability which may impress itself upon a greater or less number of generations is to be ascribed, in part, the differences between successive epidemics, between the successive stages of one epidemic, and between individual cases of disease."

Last year Dr. Gurney Dixon[21] published a work entitled "The Transmutation of Bacteria," and, after a full review of recent literature on the subject, concludes that—

"There is no reason to doubt and abundant evidence to support the opinion that in this field of life, as in others, the forces of natural selection and the survival of the fittest have been at work and have resulted, in the course of ages, in the evolution and differentiation of the various types of bacteria which we recognise and distinguish to-day," and again, "it is reasonable to expect that amongst the bacteria natural variation would occur with greater frequency than amongst higher forms of life. . . . Such variations would be more readily noted in their case since as many as 30 or 40 successive generations may be observed in the course of 24 hours."

The author points out that—

"No single property of bacteria can be regarded as specific," and that the pathogenesis attributed to an organism may be dissociated from it; again he says: "Species of bacteria have developed from a common stock. In the case of some of them the differentiation dates from a remote past and the specific characters are comparatively fixed. In the case of others differentiation is of more recent date, and the newly-acquired characters[4] are less permanent and 'reversion' in one or other character is more frequent."

Dr. F. G. Crookshank,[22] who in earlier writings as well as in his Chadwick lectures had shown a scholarly and philosophic method of investigation into the fundamentals of pathology, was able to read, without other than appreciative criticism, to the Section of Epidemiology of the Royal Society of Medicine on Jan. 23rd, 1920, a paper on "First Principles: and Epidemiology," which was instinct with the doctrine of evolutionary pathology. Fortified with illustrations drawn alike from the laboratory and the library, he challenged physic to listen to metaphysic and to condescend to define its terms and prove its propositions. He asserts that

"The attempt at recognition of epidemiological *principles* seems indeed, during the nineteenth century, to have been almost abandoned. Statistics and field-observations are matters of method, not of principle; and for the rest, the *cathedra* of the professed epidemiologists seems to have wobbled uncertainly on two legs: one the dogma that specific diseases were real things to be found in the post-mortem room; the other that epidemics were to be abolished by sanitation. Both beliefs were bred by *a posteriori* methods out of Victorian realism. Within our own memory an attempt has been made to secure equilibrium by the insertion of a third support, that of systematic bacteriology. ..... Almost alone, Sir William Collins some years ago raised his voice against the positivist doctrines of specificity in disease, and the excessive claims of the bacteriologists. Now that the inflated claims put forward in some quarters have collapsed his papers may be studied anew."

May I, having now briefly reviewed my reviewers, with due submission, repeat the question I propounded 40 years ago in your columns. "Is not the theory of specificity of disease swallowed up in the larger theory of evolution?"

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A CASE OF

GASTRO-COLIC FISTULA.

BY DOUGLAS FIRTH, M.D. CANTAB., F.R.C.P. LOND.,

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AMONGST the rarer complications of gastric ulcer is numbered gastro-colic fistula, and whilst it is recorded in most text-books of medicine, no mention is made of the possible means of diagnosis. This is to be regretted, for though gastro-colic fistula is undoubtedly rare, it should prove easy to diagnose.

Fistulæ between the upper and lower part of the alimentary canal in the abdominal cavity fall into two groups: the one in which the fistula arises spontaneously, the other in which it follows the operation of gastro-enterostomy, and is more frequently jejuno-colic than gastro-colic. Of this latter variety Dr. Charles Bolton has had a comparatively large experience, no fewer than 31 cases, and, as he pointed out at a recent meeting of the Royal Society of Medicine, when the communication between the stomach and colon is indirect—that is, via the jejunum—the diagnosis may be extremely difficult. In all his cases, however, a history of operation for gastric ulcer was present, which to those cognisant of the possibility of an intestinal fistula, serves as a valuable clue to originate an investigation to elucidate the condition. In the case here recorded a correct diagnosis was not made. The past history was indefinite, the patient had undergone no operation, and two of the most characteristic symptoms, diarrhœa and vomiting, subsided on admission to hospital, so that no opportunity occurred to investigate their nature. Nevertheless, such features as the case presented should have raised suspicions, and these once aroused, it would have been easy to prove or disprove the presence of a gastro-colic fistula.

The patient, a male aged 51 years, was admitted to hospital for diarrhœa and vomiting at irregular intervals, pain in the chest, and a "swollen stomach." The attacks of diarrhœa and vomiting had commenced in February, 1919, and usually were in evidence together, but sometimes when vomiting was present alone the onset of diarrhœa stopped it. The length of the bouts varied much, and they were not accompanied by pain. Wasting had commenced at about the same date, the fall in weight being from about 11½ st. to 9 st. 6 lb. on admission to hospital. The pain in the chest was not particularly severe, and was stated to be at a maximum before food and to be relieved by a meal. "Flatulence" had been a marked feature, and the peculiarly offensive character of the eructations was noted in the out-patient department before admission. There was no history of hæmatemesis, melæna, or anything suggestive of gastric ulcer, and with the exception of an attack of jaundice at the age of 23, the patient alleged that he had been a healthy man until the onset of the present illness.

On admission the patient was emaciated, with a sallow complexion, offensive breath, and dirty tongue. The abdomen was full, contrasting markedly with the wasted condition of the man, but there was no tenderness on palpation and no mass or other abnormality could be detected. All the other systems were normal. On the fifth day after admission slight but definite ladder-pattern peristalsis was seen on examining the abdomen, and on the following day a brief attack of vomiting occurred, during which no peculiarity in the vomit was noted. The bowels throughout acted regularly without an aperient.

A week after admission an exploratory laparotomy was performed, at which distension of some of the loops of the small intestine was found, and a large adhesion, stretching from the cæcum to the omentum, was divided. Following the operation the patient gradually sank, dying 14 days after without apparent cause; there had been no return of the diarrhœa and sickness, although the abdominal distension continued in spite of the regular action of the bowels.

Post-mortem the stomach was thick-walled, contained some fæcal material, and the mucous membrane showed chronic gastritis. On the lesser curvature of the stomach 3 inches from the œsophageal opening, was an old chronic ulcer, which had perforated into the transverse colon, forming a large gastro-colic fistula, which would admit three fingers. There was perfect firm union between the edges of the stomach and colon, which was not adherent to the stomach except at this point.

Remarks.

A consideration of the case and of the post-mortem finding suggests that a combination of some of the following symptoms should arouse a suspicion of the existence of a gastro-colic fistula:—

1. Wasting, of some duration and for which no obvious cause is present.
2. Abdominal pain or discomfort of a vague type.
3. Abdominal distension. This probably results from fermentation due to the regurgitation of fæcal matter into the stomach, leading to a chronic gastro-enteritis.
4. Offensive or fæcal-smelling eructations.
5. Intermittent diarrhœa, during which the examination of the dejecta may show the presence of undigested food.
6. Vomiting of fæcal material at intervals, without evidence of intestinal obstruction.

Confirmation of the diagnosis may be obtained by—

7. A loss of fluid on gastric lavage, a similar phenomenon to that seen in some cases of hour-glass stomach.
8. Recovery of material demonstrably fæcal by lavage.
9. The rapid appearance of a coloured meal in the stools; charcoal would answer the purpose excellently.
10. The recovery, from the stomach, of colouring matter administered as a rectal enema.
11. A bismuth meal. In jejuno-colic fistula, the picture presented by an X ray examination may be confusing, owing to the numerous routes open for the bismuth to travel, but where the fistula is solely gastro-colic, the findings should be much more definite.

The existence of a gastro-colic fistula should also be suspected if there is a history pointing to or suggesting a previous gastric ulcer, although such a history, as this case shows, is not invariable.

THE Bristol County Sports Club has collected £1000 as a Thanksgiving War Memorial Fund to endow a bed at the Bristol General Hospital. The balance will be given to the Bristol Royal Infirmary.

A MEDICAL CENTENARIAN.—Dr. James Scarth Spence Logie, of Kirkwall, Orkney, celebrated his centenary on May 11th. A member of a family well known in Orkney for three generations, he qualified L.R.C.S. Edin. in 1841 and M.D. Edin. in the following year, and was for long the leading physician in the islands.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CONJOINT MEETING OF SECTION OF OBSTETRICS AND GYNÆCOLOGY WITH NORTH OF ENGLAND AND MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETIES.

A CONJOINT meeting of the Section of Obstetrics and Gynæcology with the North of England and Midland Obstetrical and Gynæcological Societies was held on May 6th.

MORNING SESSION.

Dr. J. E. GEMMELL (Liverpool) presided.

Dr. E. HASTINGS TWEEDY opened a discussion on

The Treatment of Ante-partum Hæmorrhage.

He said that comparison of results in accidental hæmorrhage was difficult because in the compilation of different statistics different standards were adopted. The classification as accidental hæmorrhage of all antepartum hæmorrhages other than those arising from placenta prævia was a mistake commonly made by nurses and students. Of still greater importance was the determination of the amount of loss which brought the condition within the category of accidental hæmorrhage. In the Rotunda Hospital the term was not now used unless the bleeding was sufficient to necessitate calling an assistant master to make a diagnosis and to be responsible for the woman's delivery. He was not summoned unless his presence was required in the interest of the patient, and in this way many insignificant bleedings escaped the records. Thus during his mastership of the Rotunda Dr. Tweedy reported only 49 cases of accidental and 45 of unavoidable hæmorrhage in 13,924 deliveries, and in the extern maternity 47 in 15,543 deliveries. On the other hand, Sir William Smyly, adopting a different standard, in his first hospital report on 3600 deliveries, recorded 44 cases, of which he wrote, "Most of them were of little consequence." Similarly, at St. Mary's Hospital, Manchester, 105 cases of accidental hæmorrhage were encountered in the two years 1913-14; 83 of these recovered under the measures applicable for the condition in its less severe form (rupture of membranes, and so forth). Seven died in spite of this treatment and 15 were dealt with by more radical procedures. From these figures Dr. Tweedy inferred that there were certainly 22 serious hæmorrhages, but that the remainder could probably be classed with most of Sir William Smyly's cases as "of little consequence." Amongst Dr. Tweedy's 49 patients 22 were in serious danger and were treated by the vaginal plug. He lost 2 hospital and 7 extern maternity patients, in 5 of whom the plug was employed. His two hospital deaths probably arose from intraperitoneal hæmorrhage, for in one not more than a pint and a half of blood poured into the uterus, whilst in the other the patient's condition improved whilst the plug was in, and the patient died only after completion of the third stage three hours after. From 1913 to 1918, during which time Dr. Tweedy was back at the Rotunda, 23 cases of accidental hæmorrhage were encountered. The possibility of accidental hæmorrhage arising as a result of pregnancy toxæmias had by then been established and led to the performance of Cæsarean section when the double complication was encountered in a severe form. The procedure was carried out three times with success. Intra-abdominal blood was observed in all three cases, and in one the ovarian artery beneath the Fallopian tube was bleeding. Of the remaining cases, 8 were plugged. No deaths occurred from loss of blood. One woman died from sepsis ten days after delivery. Thus Dr. Tweedy's hospital experience comprised 72 cases in over 18,000 deliveries with 2 deaths. Thirty were plugged. Sir William Smyly, working in the same institution, had 5 deaths in 3600 patients treated before his adoption of the plug. These figures were convincing, and could only be explained on the assumption that the plug exercised a pronounced influence on hæmorrhage. It acted by impeding the circulation in the uterine vessels. Various other more or less satisfactory explanations had been given of the plug's action. Berkeley and Bonney had satisfied themselves that the efficacy of the plug depended on its increasing the power of the uterus to contract. In dealing with concealed accidental hæmorrhage, however, with the accompanying uterine inertia, they were driven to express a doubt whether the plug could have any directly useful effect. A plug applied in the method recommended by these writers would not compress the vessels, for they applied it with the aid of a speculum and a forceps, and used rolls of cotton, each tied round with a string to facilitate removal. Dr. Tweedy felt sure it would not be possible to place in position one dozen such rolls as are portrayed in their illustration, and that those adopting any similar technique must meet with disappointment. He had quoted from Berkeley and Bonney, not because they were singular in their views, but because of their great eminence. They undoubtedly voiced the popular opinion that it was useless to attempt the compression of blood-vessels by a vaginal plug. However, Dr. Tweedy maintained that compression was accomplished with the plug which he applied, and he had demonstrated this during the performance of several Cæsarean sections. These operations had afforded his assistants an opportunity of directly observing stoppage of pulsation in the uterine artery whilst pressure was made from below. Dr. Tweedy then described his method of plugging as follows:—

To plug efficiently the left hand should be passed into the vagina with the palmar surface directed towards the hollow of the sacrum, while the tip of the fingers lie behind the cervix. Small pieces of cotton-wool, squeezed out of lysol solution, and each of the size of the thumb-knuckle, are then taken and inserted, by means of the right hand, round the cervix. The fingers of the left hand are kept busy squeezing the pellets into a compact mass, and forcing the spaces between them to permit the insertion of still another plug. This process is continued in a systematic manner from above downwards till the vulva is reached, and the vagina can hold no more. A T-bandage is applied to keep the plug in position, and an abdominal binder is fastened tightly from above downwards to press the side walls of the uterus against the vaginal dam, and thus completes the operation. A plug so applied will cause immediate cessation of hæmorrhage, and when it is removed after the lapse of hours so much blood only will be found as can be accounted for by the flow that took place during the operation.

The vaginal plug was not easy to apply, nor was its application harmless. If at the first attempt sufficient material could not be inserted to stop the bleeding, the plug had to be removed entirely and reinserted, a procedure made easier by the dilatation of the vagina. Pain, distress, and some shock always followed the application of the plug, and superficial tearing of the mucous membrane of the vagina was almost certain to occur, whilst the possibility of rupture of the uterus could not be discounted. It was clear that the words "vaginal plug" mean in Dublin something different from that which they meant elsewhere, and critics must take this into consideration. To what extent intraperitoneal hæmorrhage could be controlled by a vaginal plug was still a matter of doubt. In the vicinity of the internal os control was complete. On the other hand, it would utterly fail to stop a leakage from the ovarian artery. The latter supplied a relatively small amount of blood to the placenta, chiefly to its upper portion where detachment was rare. When the main supply was cut off the loss of blood pressure promoted coagulation in the sinuses.

Dr. Tweedy maintained that hysterectomy had no place in the treatment of accidental hæmorrhage. Finally, he stated that rupture of the membranes did not contra-indicate the vaginal plug.

Discussion.

The PRESIDENT said that the difficulty in treating ante-partum hæmorrhage, both of the accidental and inevitable type, was to apply the surgical axiom "put one's finger upon the bleeding spot." Still, there were means towards this end, and he thought that plugging the vagina by the Dublin method would certainly relieve the urgent symptoms for a time. In placenta prævia he thought that the associated uterine inertia was a very important factor to combat. Cases of ante-partum hæmorrhage would be divided into two very important groups. The first included all the cases

where there was a mere trickle of blood, by far the greater proportion. These usually recovered with rest and morphine, and it was not necessary to interfere further. The second group included the severe types of bleeding where plugging might be employed with advantage. Unfortunately efficient plugging was very difficult, and few practitioners could do it properly.

Dr. FLETCHER SHAW (Manchester) congratulated Dr. Tweedy upon his results. He was also very glad that he had raised the question of diagnosis. He was of opinion that many cases recorded as accidental hæmorrhage were really marginal placenta prævia. In Manchester the routine treatment in these cases of accidental bleeding was to rupture the membranes, put on a binder, and give ergot, and he thought that the results were equal to those obtained by the use of the vaginal plug. One grave objection to plugging was the attitude of the general practitioner. Hæmorrhage was a very alarming symptom to the practitioner, and when confronted therewith he employed that method which he was taught as a student to be safe. If plugging was regarded as the method of election cases would inevitably arise where septic material was used for the plug, and this would add another risk to the patient. Calamities did in fact occur to-day from this very cause. For this reason he favoured the less risky method which he had mentioned. On the question of hysterectomy in cases of severe accidental hæmorrhage of toxæmic origin, he thought that this would seldom be required. Before 1916 he had met with six such cases, but none since then. As to unavoidable hæmorrhage, he agreed with the view that Cæsarean section should be used much more frequently when the child was alive.

Dr. HERBERT WILLIAMSON (London) submitted the results of treatment of accidental hæmorrhage at St. Bartholomew's Hospital since 1911. 2600 patients had been admitted to the maternity department, and amongst these were 98 cases, or 3·67 per cent., of ante-partum hæmorrhage. Fifty of these were true accidental bleeding and 48 were cases of placenta prævia. Of the former, 47 mothers recovered and 3 died. Twenty-seven of the children were born alive and 23 dead, a mortality of 46 per cent. Of the cases of placenta prævia, 12 were central, 27 lateral, and 9 marginal. Forty-five of the mothers recovered, the mortality being 6·25 per cent. Amongst the children, however, there were 32 still-births—i.e., a fœtal mortality of 66·6 per cent. As regards treatment, no local interference at all had been necessary in 58 per cent. of the cases of accidental hæmorrhage and in 16·6 per cent. of placenta prævia. Rest, position, and morphine had sufficed. Of the remaining cases, bipolar version had been performed eleven times, dilatation of the cervix three times, De Ribes's bag 18 times, Cæsarean section three times, and once for placenta prævia. Whenever vaginal plugging was required it was always done under a general anæsthetic, and strips of gauze were employed. The speaker had divided these cases into the following four groups: Group I., bleeding arrested and no further treatment required, 8. Group II., bleeding arrested but labour-pains not instituted, 3. Group III., bleeding recurred in three hours, 3. Group IV., bleeding not arrested by the plug, 4. In these 18 cases where plugging had been used there had been two maternal deaths. Of the children 5 were stillborn. Dr. Williamson, as a result of this investigation, had come to the following conclusions: Firstly, that the vaginal plug is a valuable method of treatment, and that in the majority of cases hæmorrhage tends to be arrested by its proper use. At the same time, it is not infallible, and whoever employs it must be prepared to go on to other measures. Secondly, that in the toxæmic variety of accidental hæmorrhage Cæsarean section is the only treatment. The speaker was not prepared to accept Dr. Hastings Tweedy's explanation of how the vaginal plug controls bleeding in these cases. He did not believe that it compresses the uterine vessels, and, even if it does, the anastomosis of vessels is so free that he thought it would be impossible to cut off the blood-supply to the uterus by this means.

Dr. HERBERT SPENCER (London) thought that the meeting was to be congratulated in having Dr. Hastings Tweedy's experience laid before it, and he was very interested in the results that he had brought forward. At the same time he wished to point out that, after all, many of these so-called cases of ante-partum hæmorrhage were of very little importance indeed. Anyone with much experience must know that it is rare indeed for Cæsarean section to be required for placenta prævia. Dr. Spencer had had a very large experience—in fact, it dated from last century, and he had only thought Cæsarean section necessary upon two occasions. One of these cases was where the child was alive and the cervix undilated, the other was the complication of placenta prævia with twins and hydramnios. He was led to condemn the general employment of the Cæsarean operation for placenta prævia in the strongest terms. As regards the treatment of accidental hæmorrhage, plugging had given very good results in his hands. He was glad to hear that Hastings Tweedy had condemned hysterectomy for this condition. Cæsarean section might be required, but hysterectomy never.

Dr. BLAIR BELL (Liverpool) thanked Dr. Tweedy for his very lucid explanation of the use of the vaginal plug. He was convinced that it was a valuable asset to treatment, but he could not agree with the action attributed to it. He thought that it was physically impossible to control the uterine arteries by this means, and even if the arteries were tied he did not think that the bleeding would be controlled. The more usual explanation that the plug stimulated uterine contractions was the probable one. The question was important, and he should like to see it settled by experimental investigations upon an animal such as a pregnant chimpanzee. The speaker asked for information with regard to the use of pituitrin in cases of severe accidental hæmorrhage. Personally he had not much experience of the complication, but he thought that when the membranes were ruptured it might be useful if given in moderate doses. As regards placenta prævia, he also was of opinion that there was only one treatment, and that was Cæsarean section. He had been using this treatment since 1912, and had only lost one mother and one baby.

Dr. W. E. FOTHERGILL (Manchester) referred to the teaching of students and midwives in connexion with the treatment of ante-partum hæmorrhage, and drew attention to the correspondence upon this matter which had passed between the Central Midwives Board and the examiners under the Board. He thought that it was a matter of extreme importance for teaching purposes that a definite treatment should be formulated to be used by midwives. What we thought was one thing, but equally and perhaps more important was what we taught. As regards the use of the uterine plug, he could not advise students to plug on account of the very grave risks of sepsis involved. He had seen too many absolute tragedies ever to make him an advocate of this measure.

Dr. G. W. FITZGERALD (Manchester) observed that it was evident that there were two schools of thought in connexion with the treatment of ante-partum hæmorrhage. To his mind the important factor lay in whether or not the uterus was contracting at the time of the bleeding. If the organ was active there was no need for contention, since it would do all that was required, and no active measures were indicated. The speaker said that he had had the privilege some years ago of working under Dr. Tweedy, and he was quite convinced that the old theory that a vaginal plug converted a revealed into a concealed variety of bleeding was fallacious. He was a rigid adherent of the plug, but all the same, since its use did not save the child, he thought that Cæsarean section *must* be considered. Also, in concealed accidental hæmorrhage extirpation of the uterus *might* be necessary. In cases where uterine contraction did not occur after the Cæsarean operation for this condition there was no other alternative. With regard to placenta prævia, the child must be given an equal chance with the mother, and for this reason he certainly wished to throw in his lot with those who advocated Cæsarean section for this complication. The risk to the mother was not increased, even where extreme secondary anæmia was present. This was proved over and over again in the

recovery of patients following a ruptured tubal gestation.

Dr. T. W. EDEN (London) thought that it was a matter of the greatest importance that students should be taught exactly how to plug the vagina. If this were done, and the risks of sepsis thoroughly drilled into them, the dangers of the method would to a great extent disappear. The same remark applied to midwives. Under present conditions he quite agreed with what Dr. Fletcher Shaw had stated. With regard to placenta prævia, he hoped that one result of this meeting would be the formulation of definite indications for the employment of Cæsarean section in this connexion.

Dr. SYDNEY RUMBOLL (Leeds), whilst agreeing with Dr. Tweedy's indications for the use of the vaginal plug, thought that before its use the patient could be anæsthetised and every precaution taken against sepsis. Personally he had only performed Cæsarean section for placenta prævia upon one occasion.

Mr. GORDON LEY (London) said that in his opinion everything depended upon whether the uterus was active or not at the time the hæmorrhage occurred. He had discarded plugging because he had met with one case of rupture of the uterus following this method and due to necrosis of the uterine muscle. He had carried out certain pathological investigations upon this point and he felt convinced that if plugging was firmly carried out there was a real risk of necrosis. For this reason in mild cases he preferred to follow a course of inactivity. On the other hand, if the hæmorrhage was getting worse he did not hesitate to open the abdomen. In two cases he had been unable to make the uterus contract, and therefore he *had* to remove it. He had treated 120 cases of placenta prævia by external version and 61 per cent. of the babies had been born alive. He had only done the Cæsarean operation for this complication upon one occasion, and thought that it should be reserved for those cases where the patient was at or near full term, the child alive, and the cervix undilated.

Dr. R. G. MCKERRON (Aberdeen) expressed regret that Dr. Tweedy had limited his remarks to accidental hæmorrhage. He thought that this type of bleeding, although the more common, was not the more serious of the two types. He was of opinion that the plug offered the best method of treating severe external accidental hæmorrhage, and he always taught his students exact details of the technique. His experience of placenta prævia amounted to about 200 cases. In this number he had only had four maternal deaths, and he was quite in agreement with the statement that all attempts to save the child in this complication were made at the expense of the mother. The mortality attached to placenta prævia was due not to the method of treatment but to delay in its adoption. A waiting policy was too often practised. Personally he preferred version to the use of de Ribes's bag, and in the majority of cases that he had seen the cervix was sufficiently dilated to permit of bi-polar version. He had anticipated that the discussion would largely turn upon the advantages and disadvantages of Cæsarean section. He would like to point out that although this operation to-day was a safe operation, it was not absolutely safe and devoid of risk.

Professor J. M. MUNRO KERR (Glasgow) drew attention to the importance of external version in the treatment of placenta prævia as opposed to bi-polar version. The advantage of the former was that the manipulations were fewer and there was less disturbance of the placental site. Consequently, there was less hæmorrhage and a greater chance of saving the child. The great argument in favour of employing Cæsarean section in these cases was the probable lowering of the fœtal mortality-rate. He was of opinion that the fœtal mortality with the method of version existed largely because delivery is hurried. It was very wrong to hurry, and once the bleeding was controlled much more should be left to nature. In connexion with accidental hæmorrhage, he employed the vaginal plug very frequently, and agreed with Dr. Tweedy absolutely in all that he had said. He thought it very important to ascertain whether the plug really does control the uterine artery. With regard to concealed accidental hæmorrhage, he considered that Cæsarean hysterectomy *must* be performed on occasions when uterine contraction is absent. He also thought that the employment of pituitrin after rupture of the membranes was a good alternative method of plugging the vagina, and it certainly saved the patient from the risks attached to this mode of treatment.

AFTERNOON SESSION.

At the afternoon session Mr. CHRISTOPHER MARTIN (Birmingham) presided, when Mr. EARDLEY HOLLAND (London) and Professor MUNRO KERR opened a discussion on

Rupture of the Cæsarean Scar in Subsequent Pregnancy and Labour.

Mr. HOLLAND said that no accident was more disturbing to the peace of mind of an obstetric surgeon than rupture of the scar of a former Cæsarean section. His own interest in the subject had been excited by a series of five cases of rupture of the scar which had occurred in the obstetrical department of the London Hospital during the last five years. All the operations had been performed either by himself or his colleagues, and these treacherous accidents had left a profound impression. It seemed imperative to get at the true facts without delay, not only of the causes of rupture, but also as to the frequency with which ruptures occurred. It seemed all the more important because of the increased frequency with which Cæsarean section was performed and the ever-growing list of its indications. If the risk proved to be a negligible one, obstetric surgeons could with clear consciences continue to perform the operation according to its modern indications, but if the risk were appreciable safety would have to be sought either by doing fewer operations, or by devising a technique which carried less risk of rupture of the scar than the classical one. The only way to get at the truth was by obtaining the subsequent reproductive history of a large series of Cæsarean section patients; for this purpose he had invited the coöperation of many obstetric surgeons in active hospital practice throughout Great Britain, and the results of this collective investigation had been a great success, as he would show.

Mr. Holland then gave a few important points about the anatomy of the ruptured scar and the chief factors in its causation. Perfect healing of the uterine wound resulted in complete muscular regeneration; imperfect healing resulted in thin scars composed of fibrous tissue, and sometimes these scars were so thin that they consisted of little else than peritoneum and endometrium or decidua, with a little intervening fibrous tissue. The outstanding feature was complete failure of muscular union. It was, of course, these thin scars which were liable to rupture in future pregnancies. Owing to the progressive distension of the pregnant uterus the scar became thinner and thinner, and might ultimately give way under the tension of normal pregnancy or the additional stress of labour. He had collected 92 cases of ruptured scar, fully reported in the literature, and had made a close analysis of these cases, which together with his own five made a total of 97. This study had revealed that infection of the uterine wound was by far the most important factor in imperfect healing. If the uterine wound suppurated necrosis often occurred and the sutures cut out, allowing the muscular edges of the incision to retract, and ultimately leaving a thin bridge of fibrous tissue covered by peritoneum outside and endometrium inside. In the cases so far reported the recovery from the Cæsarean section had been febrile, or infection of the uterine or abdominal wounds had been noted in 51 out of 66 cases in which this point was mentioned. As regards accidental factors in rupture, a very important one was the implantation of the placenta over the scar in subsequent pregnancies. Amongst the published cases this had occurred in 33 out of 50 cases in which this point was noted. In his opinion the action of the placenta in favouring rupture lay in the occurrence of retro-placental hæmorrhage owing to separation of the placenta from the gradually stretching scar. In only

17 out of the 97 cases were there reported such accidental factors as over-distension of the uterus by hydramnios or multiple pregnancy, or straining of the scar by obstructed labour, or operative interference like version. A most important fact that came out in the reported cases was that in the 53 cases in which the material used for sauturing the uterine wound was stated catgut was used in 41 and silk in 12; it was not justifiable to draw any inference from this, since the relative frequency with which silk and catgut respectively were employed in these cases was not known.

Mr. Holland then spoke of the result of the collective investigation, which he regarded as by far the most important part of his communication. Owing to the universal coöperation of the obstetric surgeons whom he had asked to combine with him in this investigation, he had been put in possession of the subsequent reproductive history of 1089 patients on whom Cæsarean section had been performed between the years 1912 and 1918, inclusive. The lists of these cases had been sent to him complete in every essential detail. The total number of operations performed had been 1588, so there had been 70 per cent. of successful follow-ups. Out of these 1089 patients 610 had remained sterile, and 479 had become pregnant subsequent to the operation. The results of these pregnancies were as follows: delivery by the natural passages, 70; repeated Cæsarean section, 326; abortions, 42; pregnant now, 91; and ruptured scars, 18. By adding together the pregnancies and deducting the abortions and those in the early months of pregnancy the true frequency of rupture of the scar in this large series of patients could be arrived at, and proved to be 4·3 per cent. Perhaps the most important point of all to settle was whether rupture of the scar was more liable to occur after the use of catgut than after the use of silk as the suture material for the uterine incision. To begin with, the lists of operations revealed the fact that the use of catgut is much more customary than that of silk; catgut had been used in 66 per cent., silk in 20 per cent., and silkworm-gut in 14 per cent. Amongst the 18 cases of rupture catgut had been used for the original operation in 15 cases and silk in two. But to get at the real truth as to whether rupture was more liable to occur after catgut than after silk it was necessary to find out in what proportion the two materials had been used in those cases in which the subsequent pregnancy had gone to or near to full term. It was found that in 279 such cases catgut had been employed, and in 91 silk; in the 279 catgut cases 15 ruptures had occurred, making an incidence of 1 in 18; and in the 91 silk cases there were two ruptures, making an incidence of 1 in 45. Therefore, the liability to rupture after catgut was two and a half times the liability after silk. Put in another way, if silk had been used instead of catgut throughout the whole series, and rupture had occurred in the same proportion as in the silk cases, the total number of ruptures would have been reduced to half. But he did not want to give the impression that catgut was the direct cause of rupture; after all, two cases had occurred after the employment of silk. Catgut might or might not be a suitable material in cases of aseptic healing of the uterine wound, but in his opinion asepsis of the wound could not be guaranteed since in Cæsarean section the incision was made into a mucous cavity in close proximity to a contaminated area, the vulvo-vaginal tract. In Mr. Holland's opinion catgut as a suture material for the Cæsarean section incision was doomed.

Professor MUNRO KERR said that there was definite evidence that the uterine scar after conservative Cæsarean section was less sound than was generally supposed, and that it frequently gave way completely or partially. He attributed this defective scar not to faulty technique but to (1) the difficulty of securing complete asepsis, owing to the danger of infection from the vagina; (2) the hindrance to the healing process resulting from the degenerated state of uterine muscle in the puerperium; (3) the irregular distribution of the sheets of muscles forming the uterine wall and the consequent puckering of the wound; (4) the state of unrest of the uterus subsequent to operation, caused, not only by its retraction, but by occasional contractions during which the stitches are stretched; and (5) the necessity of using ligatures, not only as coaptors, but also as hæmostatic agents. In the 40 per cent. of cases in which the placenta was situated on the anterior wall yet another disturbing factor was introduced, as the layer of tissue through which stitches had to be introduced was particularly spongy and friable and difficult to coapt exactly. Blood collected between the edges, however carefully sutures were applied, and there was a tendency for a gutter to form along the internal parts of the wound, into which the membranes protruded at a future pregnancy with development of a hernia and subsequent rupture. As means by which a better scar could be secured with the ordinary longitudinal incision, Professor Munro Kerr recommended (1) the longer preparation of cases, now made possible by the establishment of antenatal centres; (2) delay in performing Cæsarean section for pelvic deformity till the os was dilated, and delivery of the placenta per vaginam. In cases of obstruction the last few days of pregnancy should be chosen. He recommended stitching the uterus in layers—the under layer with catgut but the bulk of the muscular tissue with linen thread or fine silk. Another important point was the sutures of the uterus while in retraction as distinguished from contraction; this was possible only within 10 or 15 minutes of the birth of the child, and formed an additional argument in favour of leaving the placenta to separate naturally and be expelled per vaginam. An alternative incision was recommended by the speaker, to replace the longitudinal one. He was in agreement with most of the arguments against the extraperitoneal incision, but recently he had become more and more convinced that the lower uterine segment was an area peculiarly suitable for making an incision which would leave a cicatrix likely to stand a subsequent pregnancy. During the last three years he had used this incision on 18 occasions. After disinfection of all the parts he made a longitudinal incision from just below the umbilicus to the symphysis. He then dissected the bladder from the anterior uterine wall and made a transverse incision in the lower uterine segment. A suture at each end of the wound controlled laceration and enabled it to be pulled up for stitching after delivery. The child having been extracted by hand or, rarely, by forceps (2 cases) and the cord tied, the placenta might be removed from the wound, or per vaginam, according to the degree of dilatation of the cervix. The wound was then sutured in three layers—catgut for mucous membrane, linen thread for muscle, and catgut for tucking back the bladder. The advantages were: (1) the area was less vascular; (2) the wall was thin and the surfaces thus more easily apposed; (3) the wound in that area was at rest during the early days of the puerperium; (4) owing to the fact that the lower uterine segment did not become fully stretched until labour was well advanced the scar was in a safer region than the ordinary one. A possible objection was that the incision was in an area in which there was rather more chance of infection from below. Professor Munro Kerr appealed for a trial of this method. The interior of the uterus had been examined manually some time after one operation, and no scar could be felt. He had had only one case of spontaneous delivery after this operation, but in two others Cæsarean section had been employed for the second time.

Discussion.

The PRESIDENT said that in the future Cæsarean section would be one of the methods of election, and thus the discussion was of great importance. He had done this operation 50 times and had reopened the uterus in 5 cases for various reasons. In every case the scar looked sound, and in 2 cases was almost invisible. He thought the causes of rupture were sepsis and faulty technique. Sepsis was sometimes not avoidable, but technique could be improved. He considered that the interrupted sutures were usually placed too far apart. He had formerly used silk, but since 1915 had used picric catgut, intermediate in absorbability between

ordinary and chromic gut. His objections to the incision advocated by Professor Munro Kerr were (1) its greater difficulty; (2) its proximity to the source of sepsis.

Dr. H. S. DAVIDSON (Edinburgh) had not had a rupture, but his series did not include many cases. Silk and linen thread were used in his hospital. The decision as to the treatment of the subsequent pregnancy and the timing of the repeated Cæsarean, if performed, was very difficult.

Dr. J. D. BARRIS (London) said that the subject under discussion was a vital one. If it could be shown that the uterine scar was liable to rupture, our attitude to the classical conservative Cæsarean section would have to be profoundly modified. The cases had been collected not only for the limited period of 1912–18, but every case recorded at the hospital up to July, 1919, was included. The results were:—

Total number of Cæsarean sections (excluding sterilised cases)	81	
Number of cases treated	48	i.e., 59%
,, ,, in whom no subsequent pregnancy occurred	20	,, 41%
Number of cases who subsequently became pregnant	28	,, 59%

Results of pregnancies:—

Delivery by natural passages	4
,, repeated Cæsarean section	22
,, abortion	1
Now pregnant	1
Rupture of scar	0

The method of suture employed was a buried interrupted silkworm-gut. Cæsarean section had been performed several times upon the same patient without untoward result. Dr. Barris pointed out that catgut was used in 15 of the cases of rupture collected by Dr. Holland and that sepsis occurred in about half the cases. In his opinion there was not sufficient evidence to show that the relative sterility was the result of Cæsarean section. He concluded that we were justified in performing the classical operation. Rupture was rare provided catgut was not used and that sepsis did not supervene. Should sepsis occur he suggested excision of the scar at a later date as a precautionary measure.

Dr. L. G. PHILLIPS (London) said that, excluding sterilised and fatal cases, 60 Cæsarean sections had been performed since 1912 at the Middlesex Hospital. Of these 60 cases 39 had remained sterile and 21 had subsequently become pregnant, of whom 14 had had repeated sections, 3 had had subsequent natural labours, 2 had had miscarriages, and 1 was pregnant at the present time. There had been 1 case of rupture of the scar. The interesting features of the analysis were the high sterility percentage, unexplained, and the special interest of the rupture case. With regard to the condition of the scar in repeated sections, 4 cases had had three and 11 cases had had two repeated sections, making in all 19 repeated sections. In 1 case only was the scar seen as a thin line; in the other 18 cases the scar was invisible and impalpable, and healing was apparently perfect. A most interesting feature was the anterior placental implantation in every case of repeated sections, though in the first sections the placenta was often posterior. It had been maintained that implantation on the scar was harmful, through the trophoblastic action of the placenta or the liability to retro-placental hæmorrhage. Dr. Phillips suggested that the very reverse might be true, for a thick placenta might act as an internal splint to the scar, and tend to prevent thinning of the scar region in labour. Moreover, the uterine musculature of the scar region, because of its apposition with the placenta, would not be subjected to the same muscular strain in labour as the rest of the uterus. If this were not so, uterine retractions and contractions would lead to premature separation of the placenta, which was not common. Of the 60 cases 39 had remained sterile for from two to seven years, mostly three years or over, and, excluding cases where precautions had been taken, the percentage still worked out at 52. There was no indication that pyrexia in the puerperium was a causative factor, for 68·4 per cent. of the sterile cases had an afebrile puerperium, while 27 per cent. of those subsequently pregnant had pyrexia in the puerperium. Age and parity appeared to have no influence, as half of the sterile cases were primiparæ in the twenties. The frequency of recurring pregnancies with repeated Cæsarean section indicated that the operation itself was not to blame; latent gonorrhœal infection might play a part. Perhaps this sterility and delayed pregnancy represented Nature's attempt to allow time for consolidation of the scar. Unless the cause could be discovered and removed, such a high sterility percentage might become a powerful factor limiting the scope of the operation.

Dr. Phillips then described the case of rupture. The patient had had very severe pyrexia in the puerperium, with suppuration of uterine and abdominal wounds, from which she nearly died. The interesting feature of the case was that the patient had been delivered naturally of a full-term child one year after the operation, and only at the second pregnancy did the scar rupture. In Dr. Phillips's opinion a natural labour should not have been allowed in a case with such a bad history of sepsis. The fact that even this weak scar was strong enough for one successful subsequent labour, and the invisibility and impalpability of the scars in the 18 repeated sections, presented a strong case against a serious view of the probabilities of rupture of the Cæsarean scar. He considered the causes of rupture of the scar to be: (1) sepsis; (2) faulty suturing; (3) the use of catgut for sutures, involving absorption before union was secure owing to vigorous autolysis in a rapidly involuting uterus. He suggested that only when the technique could be trusted, the puerperium had been afebrile, and if no abnormality or obstruction was present, could natural labour be allowed with comparative safety. The history was the all-important factor, and especially the old temperature chart.

Dr. AMAND ROUTH (London) said that when, in 1910, he collected 1282 cases of Cæsarean section performed by over 100 obstetricians and gynæcologists then living, beginning with a Cæsarean section performed by Dr. Lloyd Roberts in 1867, the risk of rupture of the scar in subsequent pregnancies was briefly discussed, more particularly from the point of view of whether sterilisation of the patient was justifiable or desirable. In 1910 the mortality of Cæsarean section for contracted pelvis in clean cases was under 3 per cent., and the risk of repeated Cæsarean section in anticipated cases was even less, but 14 out of the 100 operators advised sterilisation to avoid the danger of rupture of the scar in subsequent pregnancies. In this century "not sterilised" operations had increased considerably, leading to more subsequent pregnancies and repeated Cæsarean sections. Of 669 "not sterilised" cases of Cæsarean section for contracted pelvis 112 cases had become pregnant. Of these 112 pregnancies 108 ended in repeated Cæsarean sections (some more than once), and 3 had a subsequent rupture through the scar (Nos. 12, 37, and 38 in Mr. Holland's list), a percentage of 2·6 per cent. However, Dr. Routh thought that there must have been many pregnancies and probably some more ruptures amongst the 354 "not sterilised" cases included in the last three and a half years of his series. Dr. Routh said that to encourage perfect union, if the position of the placenta could be determined or surmised, the incision should be made elsewhere, especially in "unclean" cases. It seemed clear that transverse fundal incisions were not advisable, partly because the placenta often spread on to the fundus. Professor Munro Kerr's case (No. 12 in Mr. Holland's series) was an instance of this complication. Cæsarean section should be performed at full term or at the earliest indication of labour, so as to secure perfect uterine retraction. Intra-uterine sepsis was doubtless a cause of imperfect union of the incised muscles, especially if the incision had been made through the placental site. Sepsis, even with suppuration of the wound, did not necessarily prevent further pregnancies or repeated Cæsarean section. In one of Dr. Routh's cases repeated attempts at delivery by forceps had been made during the previous 48 hours. Septic sloughs had appeared on the child's head and round the abdominal wound, and a utero-abdominal fistula had resulted. This was closed when an appendix

operation was subsequently performed. The patient had since had two children delivered by Cæsarean section. As to sutures, in 1910 catgut was used for both deep and superficial sutures by 27 operators, whilst 41 used silk and 8 silkworm-gut. Dr. Routh agreed with Mr. Holland that theoretically silkworm-gut was the safest material to use for the deep sutures.

Dr. CARLTON OLDFIELD (Leeds) said that catgut had been used in Leeds for two generations and he was sorry to see it attacked. Of his 41 patients he had himself visited 30, and 7 more had answered questions by letter, so that the results in 37 cases were known. Of these, 20 had had no pregnancy after the Cæsarean section. Three had had natural labour at term, and one of these —whose Cæsarean section had been performed for an ovarian cyst—had been through three full-term pregnancies since her operation. Three patients were now pregnant. In all 21 patients had become pregnant again. Dr. Oldfield believed that the exaggerated importance attached to the operation by patients and sometimes even by the profession, contributed indirectly to the relative sterility, since precautions were adopted to prevent a recurrence of pregnancy. He considered that by explaining to patients the safety of the operation the emotional factor, which made for artificial sterility, could be controlled. He did not consider catgut to blame for rupture—the important point was avoidance of an infected wound. The patient's second operation should be undertaken before labour set in. There were many objections to the use of silk sutures, and the possible immediate results, such as a more septic wound, should be borne in mind. His objection to Professor Munro Kerr's suggestion was that there would be extreme tension of the scar if natural labour took place, beside the greater likelihood of infection.

Dr. HERBERT SPENCER, after expressing his appreciation of the valuable papers read by Mr. Holland and Professor Munro Kerr, regretted that the work had not been carried out on the same scale and general plan as that adopted by Dr. Routh. It was a pity that the series was not made continuous with Dr. Routh's, and that the cases in which the first operation was performed before 1912 were excluded. Dr. Spencer had performed 66 Cæsarean sections and 13 repeated Cæsarean sections, and had never met with a case of ruptured scar. He did not think it ought to occur in an aseptic case *properly sutured*. He regarded adhesions in an aseptic case as due to faulty technique. His practice was to use carbolised floss silk of moderate thickness for the deep sutures, and then a continuous fine silk suture passed parallel to the incision, taking a double grip of the peritoneum and superficial layer of muscle, so that the deep sutures were buried and no suture at all was shown. He regarded this method of suture as far superior to the Lembert or mattress sutures. He strongly condemned the use of catgut, as it was impossible to ensure its sterility. He considered silkworm-gut too thin for closing the Cæsarean section wound as it was apt to cut the tissues.

Dr. Spencer drew the attention of members to the results in eclampsia. Of 12 cases delivered by Cæsarean section 5 only became pregnant subsequently, and in 2 of these the scar ruptured with a fatal result. He considered that Cæsarean section was rarely justifiable for eclampsia, and suggested that Cæsarean section was now being performed too often on inadequate grounds. In general he agreed with the dictum, "Once a Cæsarean section, always a Cæsarean section." As to the retro-vesical incision, he saw no advantage in its use in aseptic cases, but it might be useful in certain infected ones, especially if stitched up with silver wire left long and subsequently removed through the os. The value of this incision would have to be decided by carefully recorded cases, with due reference to its effect on the time taken in delivery and the condition of the child.

Dr. BLAIR BELL considered that of the three causes of rupture sepsis was the most prominent. If the placenta was on the anterior wall it was difficult to sew up the wound properly. The position of the placenta could often be recognised by the presence of blood-vessels on the uterine wall, and the site of the incision could be chosen accordingly. The factor of autolysis of the muscle was unavoidable. The technique used was often faulty; a mattress suture with overstitch as described in his recent lecture (THE LANCET, May 8th, p. 993) was preferable to the interrupted suture. As to suture material, Dr. Bell believed silk to be quite unsuitable, but approved of chromic catgut. He had tried Professor Munro Kerr's method. In the first case he had found it simple and easy, and the wall was not so thin as was suggested by some. Very rapid extraction was possible—a leg should be found and pulled out first. He preferred a trap-door incision ⌣ as a transverse one did not give enough room. He approved of strong hypochlorite solution for sterilising the parts. In another case a network of varicose veins covered the area he had wished to incise, so that he had to extend his original skin incision upwards. He concluded that Professor Munro Kerr's method was unsuitable because it was not always possible to use it, and the decision could not be made till the uterus was exposed.

Dr. E. O. CROFT (Leeds) had had no personal experience of rupture of the uterine wound following Cæsarean section, but considered that the effective closure of the wound so that union of the whole thickness of the muscular wall was brought about with the formation of a minimum scar tissue was the important point in prevention. He was a champion of the silk suture. In two cases in which the patient had died of other causes, and he had occasion to examine the uterus, there was perfect union of the uterine wall and no trace of silk to be found. In one of these cases in which the patient had contracted gonorrhœa and had become pregnant pyosalpinx was found, and though infection ensued the wound itself, sutured with silk, still held. The stitches should not be more than ½ inch apart, should be inserted with a fully curved needle, should be entered and brought out at a good distance from the cut edges, and should include peritoneum but not decidua.

Dr. G. FURNEAUX JORDAN (Birminghan) had done 19 repeated Cæsarean sections, and in three cases a third operation, but had never seen a rupture. He used one continuous catgut suture, and had only once been able to find the previous scar, though he always made his incision in the mid-line. He was struck by the large relative sterility in Mr. Holland's figures. He agreed with Dr. Oldfield's view as to its chief cause, and habitually reassured the patient at the first operation. He never refused to perform a Cæsarean section on grounds of previous examinations outside, and had had only one death from sepsis. He always poured a big jug of biniodide through the uterus.

Dr. FOTHERGILL was inclined to agree with the American belief that one Cæsarean need not necessarily be followed by another, provided that the patient was kept under observation during her next pregnancy, and that the operation had not been done for mechanical obstruction. He did not believe the particular type of suture used to be of great importance, nor did he think it was necessary to sterilise the uterus. As regards Professor Munro Kerr's method, Dr. Fothergill said that he always made his uterine incision high so that the two incisions, abdominal and uterine, were not opposite each other.

Dr. W. GOUGH (Leeds) had had experience of 100 cases—all done for contracted pelvis—of which 18 patients had had two and 5 patients three Cæsarean sections. He had never had a rupture, but had seen thin scars. He always used catgut in a continuous suture in two layers. He would like to hear the proportion of ruptures in cases operated on for contracted pelvis only, as in the newer indications for Cæsarean section, such as eclampsia or ante-partum hæmorrhage, the muscle might be weakened by toxæmia or exhaustion.

Dr. J. W. BRIDE (Manchester) described the Subsequent Reproductive Histories of 190 Cases of Cæsarean Section from St. Mary's Hospitals, Manchester, during the period 1912–18. The total cases in the period under investigation communicated with were 243; replies were received from 190 cases. Of these, 94 subsequently became

pregnant, of whom 3 were delivered by the natural passages, 68 had repeated Cæsarean sections, and 1 had a rupture of the Cæsarean scar; 13 had aborted and 21 were now pregnant. Of the 96 cases who had not become pregnant again, 22 cases took precautions against pregnancy, 4 cases were widowed, 3 cases died of non-pelvic conditions at a later date; in one case the husband had been on active service since the operation. The remaining 66 state that they took no precautions. Fifty-three of the 96 patients had pyrexia of greater or less degree after the operation. Of the 4 cases where natural delivery had been attempted 1 died of rupture of the Cæsarean scar. The other 3 were cases of slight pelvic contraction. Two had living children, and 1 a craniotomy and subsequently another Cæsarean. In each of the 68 cases of repeated Cæsarean sections the indication had been contracted pelvis, with the following five exceptions: large child, 1; eclampsia, 1; fibroid, 1; recto-vaginal fistula, 1; overdue pregnancy with excessively large child, a monster, 1. Twenty-one cases were allowed to go into labour, and 47 cases were not in labour. In only 1 case was silk used. Forty-four cases had some degree of pyrexia. In the case of rupture of the scar, the patient, aged 23, was admitted on Nov. 24th, 1916, with an ovarian cyst obstructing labour. Dr. Fletcher Shaw performed Cæsarean section and right ovariotomy. Early in 1919 she was seen by Dr. Shaw, who decided to let labour proceed normally as there was no pelvic contraction. On May 14th, 1919, the patient was admitted in labour at 2.40 A.M. in good condition. At 5 A.M. she had some very strong pains and slight bleeding from the vagina. At 8.15 A.M. she had a running pulse of 140, and a subnormal temperature. On abdominal palpation it was obvious that the uterus was ruptured, and the abdomen was immediately opened. The child was free in the peritoneal cavity and dead. The uterus was inverted through the old scar, which had ruptured, and the placenta was adherent to the inverted uterus. The peritoneal cavity was full of blood. The child and placenta were rapidly removed, the inversion corrected, and supravaginal hysterectomy performed as quickly as possible. The patient died at 7 P.M. from collapse and shock.

Dr. Bride concluded from the cases investigated by him that precautions against pregnancy probably accounted for much of the relative sterility after Cæsarean section, especially as included in the 66 cases who are put down as "no precautions" were many who evaded answering this question at all. Of the 21 cases now pregnant, several showed an interval from childbearing corresponding with the interval of absence of the husband on active service. Abortions did not seem to follow Cæsarean section with any marked frequency. No definite conclusion as to the safety of allowing a post-Cæsarean uterus to be subjected to the strain of labour could be drawn from the statistics of St. Mary's Hospitals, Manchester. In Dr. Bride's opinion, however, it appeared doubtful if it could ever be good practice to subject a scar in an organ so liable as the uterus to excessive distension and powerful contraction, to the strain of labour. With regard to suture media, with perhaps half a dozen exceptions, two layers of catgut, sometimes chromicised, had been used in all the cases in that series. He thought that the figures showed that repeated Cæsarean sections might be undertaken many times with impunity, and that the risk in the early stages of labour appeared negligible. He had assisted Dr. Fletcher Shaw to perform Cæsarean section for the seventh time on the same patient last year. She had been in labour four or five hours before operation, and the uterus, though adherent, was well healed. She was sterilised on that occasion.

Mr. CLIFFORD WHITE (London) said that two theoretical considerations had an important bearing on the suture joining the Cæsarean incision. Firstly, the uterus was the seat of intense autolysis, as was shown by the weight diminishing from about 2 lb. to 2 oz. in a few weeks. This autolysis was most rapid in the first few days, and it was not fair to expect an absorbable suture like catgut, standardised for absorption in ordinary muscle, to withstand digestion in an organ where autolytic action was proceeding with such violence. Secondly, a continuous suture was unsuitable for holding the wall of the uterus in close apposition, because the uterus was involuting at the rate of over ½ inch in 24 hours. Hence a 5-inch uterine incision was only 3 inches long on the fourth day, and any continuous suture must become slack and incapable of holding the uterine wall closely united. This applied to some extent to the use of mattress sutures. As the uterus was diminishing so rapidly in size the interrupted sutures must be tied much more tightly than was usual in other surgical procedures, or they would become loose in a few days. The rhythmic contractions and relaxations of the uterus would accentuate this tendency. It would seem, therefore, on theoretical grounds that a weak scar was particularly likely to occur: (1) with catgut, and (2) when continuous sutures were employed; conversely, a strong scar should result when a non-absorbable interrupted suture was employed. Mr. White had personal experience of 70 cases of Cæsarean section. Of these, eight were Cæsarean hysterectomies, leaving 62 cases in which the scar might yield. None were sterilised. In every case he had used interrupted sutures of silk or linen thread. He had never seen or heard of any yielding of the scar in any of these cases. Of the 62 cases, seven had had more than one Cæsarean operation—two patients having Cæsarean section performed three times and five twice. In each case the scar was sound, and in only one was it easily noticeable. In addition to these, several cases had come to his knowledge where patients had had normal or forceps deliveries after Cæsarean sections for eclampsia or placenta prævia, and in no case had there been symptoms or signs of rupture. In one case of Cæsarean section for eclampsia in two successive pregnancies the scar was not found to be weakened when seen at the second operation, showing that toxæmia did not necessarily cause imperfect uterine union in all cases.

Dr. FLETCHER SHAW said he used chromic catgut, but found Mr. Holland's figures convincing. There might, however, on further analysis prove to be a different explanation for the ruptures.

Dr. LAPTHORN A. SMITH (London) said a few encouraging words on the success attending Cæsarean section. He feared lest the figures given might unduly depress the younger members present.

In reply, Mr. HOLLAND expressed surprise that all the members were not now convinced of the influence of the suture material on rupture. He preferred silkworm-gut to silk. In reply to Dr. Spencer he had excluded cases operated on for the first time before 1912 because it would have been impossible to tell which of the scars had ruptured.

Professor MUNRO KERR, in answer to Mr. Clifford White, said that no cystitis had occurred in any of his cases. In answer to Dr. Blair Bell, he did not see why placenta prævia should interfere with his method, as an ordinary incision was often made inadvertently over the placental site with no bad results.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM: ANNUAL CONGRESS.

THE Annual Congress of this society took place in the rooms of the Royal Society of Medicine on April 29th and 30th, and May 1st, under the presidency of Mr. J. B. STORY, P.R.C.S.I.

President's Address.

The teaching and examination of medical students in ophthalmology formed the subject of the President's address. He said: The Council of British Ophthalmologists have already urged the General Medical Council to adopt two reforms—first, to make three months' attendance at an ophthalmic clinic obligatory, and, secondly, to have an examination by ophthalmic surgeons as part of the final pass examination. The General Medical Council accepted the first and rejected the second—a most astonishing thing to those who know well that medical students have no time to

waste on subjects that are not necessary and in which examination is not compulsory. There are two reasons why a certain knowledge of ophthalmology is necessary for every person permitted to practise: (1) because the vast majority of practitioners cannot escape from having to diagnose and treat diseases of and injuries to the eyes when no specialist can be obtained; and (2) because in many serious diseases the evidence afforded by ocular conditions is most important, and often the ocular symptoms are those which induce the sufferer to seek medical advice. For instance, interstitial keratitis may be the first evidence of infantile syphilis, even before the eruption of the teeth described by Jonathan Hutchinson; and acquired syphilis may show itself in the choroid, iris, or retina long after the patient has forgotten the primary disease completely. Ocular tuberculosis may be the first visible manifestation of that disease, and the ocular signs are important in tabes, disseminated sclerosis, meningitis and other intracranial lesions, diabetes, nephritis, arterio-sclerosis, to mention only a few serious and not uncommon affections. In many of these the ocular signs may be mainly naked-eye appearances or fairly easily observed ophthalmoscopic lesions.

The final decision of the General Medical Council is said to be that the hospitals should, or may, refuse certificates to students who do not acquire sufficient knowledge, thus shuffling off the responsibility thrown on it by Act of Parliament and placing it, not on the licensing bodies over whom it has control, but on the medical staffs of hospitals. It has been objected that if an examination in ophthalmology is instituted at the Final it will overload the curriculum, and that other special branches of surgery will claim a similar privilege. As regards the first objection, the special clinical examination has been the rule in every one of the Irish licensing bodies for some 30 years and has not caused overloading. As regards the second, it has been already pointed out how great is the importance of ocular signs and symptoms in serious constitutional diseases, an importance much greater than can be assigned to any of the other organs usually taken up as specialties. Ophthalmic surgeons are not narrow-minded, and would certainly urge that every medical man should be able to recognise anomalies of ear, nose, and throat which can be seen with such simple instruments as the common head-mirror and aural speculum.

The speaker insisted upon the necessity of a practical clinical examination, as in his experience of now 30 years as an examiner he had found students whose book knowledge was perfect unable to diagnose quite simple ocular anomalies in the patients before them. The General Medical Council should be urged by the society to reconsider its recommendation, and institute the following reforms: 1. That each candidate for a licence to practise should be compelled to attend an ophthalmic clinic for a period of three months. 2. That the Final examination should include, as a separate pass subject, a clinical examination by ophthalmic specialists. If the Ophthalmological Society is unsuccessful, it is hoped that the general practitioners throughout Great Britain will take the matter up.

Contributions and Functions.

Contributions were read on Thursday, April 29th, by, among others, Mr. C. H. Usher and Mr. John Rowan, whose paper on the Non-operative Treatment of Glaucoma led to an interesting debate in which Mr. Treacher Collins, Mr. A. Zorab, Sir Anderson Critchett, Mr. Harrison Butler, Dr. G. Mackay, Mr. Rayner Batten, Mr. Richardson Cross, Mr. Gray Clegg, Mr. R. Cruise, Dr. A. Hugh Thompson, Mr. Bishop Harman, Mr. B. Cridland, and the President took part.

There was a wealth of clinical material shown at the Royal London Ophthalmic Hospital, City-road, and St. Margaret's Hospital, under the Metropolitan Asylums Board, concurrently with the Congress. On Thursday afternoon members visited Moorfields, when Mr. Percy Flemming lectured on the Neighbourhood of Moorfields in Former Days, with the aid of lantern-slides and maps. The lecturer was cordially thanked for an interesting discourse.

On Friday morning Sir Archibald Garrod and Mr. R. Foster Moore opened a discussion on Diabetes in Relation to Eye Diseases, in which Dr. O. Leyton, Dr. F. J. Poynton, Mr. H. P. Adams, Dr. P. J. Cammidge, Dr. C. O. Hawthorne, and Mr. R. R. James, among others, took part. Papers were read by Mr. H. M. Traquair, Dr. Gordon Holmes, Mr. M. L. Hine, Mr. Ernest Clarke, Mr. Humphrey Neame, and Mr. W. Wallace.

On Saturday morning the members visited St. Margaret's Hospital, which is devoted, under the Metropolitan Asylums Board, to the study of ophthalmia neonatorum, when after an inspection under the direction of Mr. M. S. Mayou, a full discussion took place on the prevention of the disease, opened by Dr. G. Fitzgibbon, Master of the Rotunda. Mr. Mayou, Dr. Scharlieb, Dr. Elizabeth Macrory, Mr. Sydney Stephenson, Dr. Maitland Ramsay, Dr. J. Wharton, and Mr. A. L. Whitehead were among those who contributed to the debate.

Mr. TREACHER COLLINS proposed the following resolution, which was carried unanimously:—

"The Ophthalmological Society of the United Kingdom wishes to urge on the Metropolitan Asylums Board, now that so large a number of cases of ophthalmia neonatorum are aggregated in one institution, that facilities should be afforded at it for the teaching of medical students, midwives, and district nurses as to the natural history and treatment of the disease."

The members of the Congress dined together on the opening evening.

THE ASSURANCE MEDICAL SOCIETY.

A MEETING of this society was held on May 5th, Dr. T. D. LISTER, the President, in the chair.

Sir THOMAS OLIVER read a paper on

Gastro-intestinal Operations and their Sequelæ, especially Cancer, from a Life Insurance Point of View.

After some introductory remarks the lecturer proceeded:

Gastro-duodenal ulceration is a serious condition. Life is only saved and health regained in many instances by short-circuiting the route from the stomach to the jejunum. Even where the operation has been successful, we can hardly regard the life as a normal one from an insurance point of view. Some offices probably do not accept such lives at all. Too little time has passed since the operation became a recognised means of treatment for sufficient experience to have been gained and data collected for us to speak absolutely upon this point, for although three or four years may have been spent in comparatively good health by a patient since his operation certain accidents may yet arise at the junction or close to the site of operation, which may undo all the good achieved. What are these accidents? Like many of you, I am consulted fairly frequently by patients upon whom gastro-enterostomy has been performed, and who are no better for the operation. There is always the possibility of fresh peptic ulceration taking place, not so much in the stomach itself as in the jejunum, and due to the rush of acid chyme into this portion of the intestine. Again, ulceration may occur at the junction—a stitch or two may have given way rather prematurely, and thus created a minute chink in which the acid contents leaving the stomach exert a harmful influence. There is, too, the possibility of adhesions forming, while yet another possibility is that of cancer. It is this question of growth as a sequence to gastro-jejunostomy which led me to prepare this paper in the hope that it might be discussed at this meeting and that light might be thrown upon this important subject. A few months ago I examined a client for life insurance who had had gastro-jejunostomy performed upon him, and as I had recommended acceptance of the life as an invalid one for a limited period of years with a slight loading, the head office suggested that in a large percentage of patients thus operated upon cancer subsequently developed at the site of the operation. This has not been my experience, neither has it been that of our local surgeons, nor of the Royal Victoria Infirmary. The sequel of malignant disease following upon gastric operation, apart from the fact of cancer existing at the time of the operation, has not been observed in the North of England. As the subject is important from a life insurance point of view, I asked for further details from the head office, and received the following:—

"(1) The principal medical officer stated that, as regards operation for duodenal ulcer, the disease might or might not occur on a future occasion; it might lead to stricture and ulceration, or the scar left after the operation *might* degenerate into cancer.

(2) Another of the medical examiners was of the opinion that if the ulcer did not heal, bleeding or perforation might take place, and that a fresh ulcer *might* form at the site of operation or cancer develop.

(3) Another examiner wrote that fresh ulceration might take place at the site of gastro-enterostomy, adhesions might form, or, as a later but not a common event, a malignant growth might develop.

(4) A fourth examiner was of the opinion that the following complications may follow operations for duodenal ulcer—internal hernia, rather a rare event, and perforation in 2 per cent."

Cancer as a Sequela to Gastro-enterostomy.

To me the replies, so far as malignancy is concerned, were not helpful. Cancer was only referred to in such a way as to suggest that the statements were not based upon experience. I therefore wrote to my infirmary colleagues, and here are their replies. Mr. J. W. Leech says, as the result of 20 years' experience as an operator in gastro-duodenal diseases:—

"Cases of malignant disease are recorded, but such is not my experience. It would, however, be reasonable to presume that some cases primarily regarded as simple ulcer were, in fact, malignant at the time of operation."

Another surgical colleague, Mr. Gray Turner, writes:—

"If cancer follows, it must have been present at the time of operation and been overlooked. Although not unknown, it is so rare for cancer to develop after the operation as to make it certain that it had arisen *de novo*. After gastro-enterostomy there are fresh dangers which may become a menace to longevity—viz., jejunal and gastro-jejunal ulceration in 2 to 5 per cent."

The experience of my infirmary colleagues is in conformity with my own—viz., that if cancer is subsequently found at or close to the site of any of the operations I have alluded to, it is more than probable that it was present, but not diagnosed, at the time of the operation. I wrote to Sir Harold Stiles, of Edinburgh, and asked him what sequelæ he had found after gastro-enterostomy, and he replies:—

"I have only seen two ulcers follow gastro-enterostomy; they were both at the seat of anastomosis. ..... I have had no experience of cancer following gastro-jejunostomy."

Mr. Henry M. W. Gray, of Aberdeen, writes:—

"No case has come under my notice of cancer developing at the site of gastro-jejunostomy operations. ..... I think the condition must be a very rare one, else we should have heard much more about it ere this."

Sir Kennedy Dalziel, of Glasgow, writes:—

"I have nine cases of cancer of stomach after operations for gastro-enterostomy, but in no case did the tumour originate at the new orifice, though simple ulcer has been noted in five cases there. Most of the malignant cases have developed eight to ten years after the gastro-enterostomy on the site of the original ulceration. I have not had any ulceration at the anastomosis since I gave up clamps and used three rows of stitches, now about 15 years ago."

Sir Kennedy Dalziel's experience is very interesting. It confirms the view expressed by some pathologists that cancer occasionally develops upon an old ulcer. There has been an opinion expressed by some French physicians that pulmonary phthisis occasionally follows upon gastro-enterostomy, but of this I have no experience.

To obtain further information upon this relationship of gastro-jejunostomy and cancer I wrote to Dr. Homer Gage, of Worcester, Mass., U.S.A., Medical Director of the State Mutual Life Insurance Co. In a pamphlet entitled "Surgery of Gastric and Duodenal Ulcers in Relation to the Insurance Risk," he states, after alluding to the possible recurrence of symptoms years afterwards, that the

"study of living pathology made possible by gastric surgery has revealed gastric ulcer as the forerunner, if not the cause, of a very large proportion of gastric cancers."

Experience in America.

In the Clinic of the brothers Mayo 71 per cent. of gastric cancers presented evidence of a previous ulcer; also in many instances, where the ulcer had been excised at the operation, microscopical examination showed that malignant disease had already commenced. What the Mayo experience shows is this—that at the operating table it is not always easy to tell, by naked-eye appearances, a simple ulcer from one in which cancerous changes have already commenced, and that since on microscopical examination in what appeared to be a simple ulcer there is frequently found evidence of ulcer, malignancy has probably been present from the first. Of the two sites of ulcer, gastric and duodenal, the duodenal seemed to the Mayo brothers to be the one less likely to be followed by malignant disease. If malignancy is concealed in what appears to be a simple ulcer at the time of operation, two circumstances suggest themselves. One is that we would expect the cancerous growth to reveal itself sufficiently as to be recognisable within at least two years after the operation, and the other is the advisability of excising simple ulcers. Our experience in the North of England is that malignant disease follows short-circuiting so infrequently as to be discountable. Since there is a discrepancy between British and American experience in regard to this question, there may probably be at work other factors than those which relate only to the operation. The incidence of cancer is, I believe, greater in America than it is in this country. It may be, too, judging from Sir Kennedy Dalziel's experience, that the incidence of cancer among the general population is greater in Glasgow than it is in Edinburgh and Aberdeen, and, if this is the case, the circumstances cannot altogether be ignored as playing a part in the varying experiences of surgeons as regards post-operation gastro-intestinal cancer.

The Risk of Cancer in Recommending Acceptation for Insurance.

The question I submit to you is not alone whether cancer is a frequent after-event at the site of gastro-intestinal operations, but one involving larger issues, such as the insurability of persons who have had operations performed upon any part of the alimentary canal. As regards appendicectomy, for example, there is not the least doubt that a man without an appendix is freer from risks than a man who still owns one, and yet few insurance offices would regard a man who had had a serious internal operation performed upon him as a first-class life. And to some extent there is a reason for this, for the appendix in a few instances has been the seat of cancer at the time of operation, and, but for microscopical examination, might simply have been regarded as an inflamed tube. This circumstance therefore suggests the inadvisability of accepting lives which have been operated upon for appendicitis until at least three or four years have elapsed since the operation. On the other hand, since malignant disease so infrequently follows upon operations for appendicitis, and competition between insurance offices is keen, some examiners might feel disposed to recommend acceptance of the life as early as one year after the operation, if young and otherwise healthy, with an addition, which should automatically decline and disappear after a limited number of years, provided that the health of the applicant has been improved by the operation.

Insurability after Gastro-duodenal Ulcer without Reference to Malignancy.

Reverting to the subject of insurability of persons operated upon for gastro-duodenal ulcer, and in this instance without reference to malignancy, Mumford found in 147 cases of gastro-enterostomy for ulcer of the stomach that in 17 per cent. the end result was "bad." Sir Berkeley Moynihan, drawing his experience from 186 cases upon which he had operated for duodenal ulcer, states that from an insurance point of view 12 per cent. are unsatisfactory; while Graham, taking his figures from the Mayo Clinic, found of 438 patients operated upon for duodenal ulcer and 162 for gastric that 12 per cent. and 20 per cent. respectively were unsatisfactory from an insurance point of view. It is not to be inferred that any one of the patients was the subject of post-operative malignant disease, but that they were simply not improved by the operation. That surgical intervention in gastro-duodenal ulcer has saved many lives and transformed thousands of invalids into active, cheerful, and healthy men and women goes without saying. Sir Kennedy Dalziel informs me that one of his patients 25 years after the operation remains quite well. In one of his patients who died from disease—not of abdominal origin—nine years after operation the pyloric orifice had become almost obliterated, but the duodenum remained patent, and it had apparently been functioning normally. Ninety-five per cent. of the Mayo patients were alive and well at the end of three years. Successful as gastro-intestinal surgery is, we not only still require more data to guide us to a conclusion, but each life must be dealt with on its own merits.

Given an applicant who has been subjected to gastro-enterostomy, whose health is good, and whose physique is in no way injured, I think such a life might be accepted, with a fair addition, for a limited period of years—say, 15 or 20, according to age, family history, and general physical condition, on the understanding that if the applicant survived that period a portion of the extra premium might be returned in the form of a bonus. This might not be quite consistent with the principle of average which is the basis of life insurance. It might be found impracticable to return a portion of the extra premiums to those who had survived and out-reached the 15 or 20 years suggested. On the other hand, would it be fair to saddle the survivors with the burden thrown upon the office by those who died within, say, five years after the operation? I do not know the intricacies of actuarial methods, but is it necessary to create sectional invalid insurance and to load any one section with its own burden, or is it preferable to distribute the risk over the total number of lives insured, after a supposed limit of safety has been reached? One other way suggests itself, and it is to load the life heavily with an extra premium for the first five years, after which, the risk having been covered, the policy might be regarded as normal for the age reached by the insured person.

Discussion.

Mr. MCADAM ECCLES said that gastro-jejunostomy for pyloric obstruction of a simple nature was one of the most satisfactory of gastric operations, and although there should be a loading for the first five years, it might be remitted afterwards provided the "life" remains in good health. Gastric ulcers might heal. He was doubtful

as to a duodenal ulcer healing without surgical aid, but he thought gastric ulcers were more doubtful from an insurance point of view because of their liability to malignant disease. Carcinoma at the actual site of the anastomosis in a gastro-enterostomy must be exceedingly rare. With regard to adhesions and intestinal obstruction following abdominal operations, they were liable to occur even after gastric operations. They certainly occurred after appendicular suppuration, and by no means infrequently after hysterectomy. Hence a history of any operation of these varieties should raise the suspicion of possible adhesion and possible intestinal obstruction and the "life" should be loaded in many instances.

Dr. THEODORE THOMPSON said that one very important sequel of abdominal operations had not been given the importance it deserved in Sir Thomas Oliver's paper. The formation of adhesions after abdominal operation was very common and, unfortunately, intestinal obstructions not uncommonly followed. Dr. Thompson examined a case for life insurance recently. Four years before the subject had had a severe operation for an appendicular abscess, but he had been quite well since; in view, however, of the severe nature of the appendicitis five years were added. Six weeks after the examination he was seized with severe abdominal pain and acute intestinal obstruction, the result of an adhesion in the right iliac fossa. Dr. Thompson therefore strongly advised that in cases of appendix operation, where abscess has been present, the "life" should be loaded. He pointed out that not only do adhesions follow appendicular operations and other pelvic operations, but they also occur after operations for gall-stone and gastric trouble.

The PRESIDENT pointed out the importance, from the point of view of insurability, of the freedom from symptoms after the operation.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this society held on April 15th Dr. RUPERT HALLAM read a paper on

The Therapeutic Uses of Radium.

After a brief description of the chemical and physical properties of the metal he explained the methods employed in estimating the quantity of radio-activity in the various applicators used in medicine and surgery. The strength of each applicator supplied by the Sheffield Radium Institute is always described in terms of radium metal, and he suggested that it would be a great advantage for the comparison of doses and results if this unit of dose was universally adopted. Although the Sheffield radium purchased in 1915 was primarily intended for the treatment of inoperable malignant disease, it had also been extensively used for the treatment of certain skin diseases. In his experience the results obtained in the treatment of rodent ulcer (providing the ulcer did not involve the bone or conjunctiva) were good. He had latterly employed carbon-dioxide snow in conjunction with the radium, and anticipated a higher percentage of non-recurrences. Thirty-three cases of cavernous nævi treated during the year 1919 had all responded exceedingly well, and he maintained that this method superseded all others. A large number of cases of malignant disease had been treated by the surgeons of the four voluntary hospitals in Sheffield during the last four years from radium supplied by the Sheffield Radium Institute. Sarcoma apparently responded more favourably than carcinoma to the application of radium, and four cases which had been free from recurrence for periods varying from one to four years were shown at the meeting. The results of the treatment of carcinoma of the cervix had been disappointing. In no case of carcinoma of the mouth could improvement be said to have occurred. In conclusion, Dr. Hallam maintained that apparent cure of inoperable malignant disease by radium was exceedingly rare, but that it often relieved pain, lessened discharge, and gave patients a ray of hope.

At the close of the paper several members related their personal experience of the treatment of malignant disease with radium. Dr. MILES PHILLIPS had found it of little value in carcinoma of the cervix. He expressed the opinion that equally good results were obtained by curetting the growth, and he related a case in which this method had been employed and the growth remained quiescent for four years.—Dr. G. WILKINSON described several cases of sarcoma of the tonsil which had responded well to the treatment and were apparently free from disease.—Mr. ARCHIBALD CUFF had employed it in two cases of menorrhagia with satisfactory results.

Reviews and Notices of Books.

A STUDY OF THE LONG BONES OF THE ENGLISH SKELETON.

By KARL PEARSON, F.R.S., and JULIA BELL, M.A. Part I.: "The Femur," Chapters I. to VI., Drapers' Company Research Memoirs, Biometric Series X., quarto, text and atlas, 30*s.* net; Part I., Section II.: "The Femur of Man, with Special Reference to other Primate Femora," Chapters VII. to X., Appendices, Bibliography, and Indices, Biometric Series XI., quarto, text and atlas, 40*s.* net. Cambridge University Press. 1919.

IT requires no special knowledge on the part of anyone walking in a London street, where may be met casually all types of all nationalities, to distinguish between a Negro and a Chinaman, an Indian and an Italian, an Englishman and a Japanese, and correctly to identify them. But if the skeletons of representatives of these same races are submitted to an observer, he will have to acquire a special experience before he can confidently express an opinion upon the racial characteristics displayed by the bones Yet, if he sets about his task in the proper way it is possible for the anatomist to arrive at conclusions from the examination of mere bones at least as accurate as those of the man in the street who picks out representatives of living races and correctly "places" them. But it is the method of science to strive after exactness, and the objective expression of its results in figures; and for the last century anatomists have been measuring bones and endeavouring to express in angles and proportions the distinctive peculiarities of individual bones, and the statistical meaning of figures obtained from comparing large collections of bones. The aim of such procedures was primarily to give numerical expression to distinctively racial characters that could be appreciated by the observer: but in course of time most anthropologists came to pay more attention to measurement and less to the appreciation of racial traits. Through sheer laziness they spared themselves the bother of study and observation, and simply recorded the measurements of bones—often made merely by a laboratory servant, and did some crude arithmetical juggling with the figures so obtained. One has only to glance through the pages of any anthropological journal to realise that this is no exaggeration of the state of affairs. But the mathematician then interposed with the claim that if anthropology was a mere question of statistics it was clearly essential that the treatment of the figures obtained by measuring bones should at least be conducted in accordance with the approved methods of statistical science. For the last quarter of a century Professor Karl Pearson's school of biometricians has been showing biologists how figures should be dealt with scientifically, and has been trying to impress upon them that if biology is nothing more than measurement—as much of their writings seemed to suggest—something more than kindergarten arithmetic was needed to extract any sort of meaning from the figures.

Incidentally Professor Pearson has built up a great school of applied mathematics, and has shown biologists how figures should be treated, and how significant are the results that can be obtained by such objective methods, even from the plastic and ever-changing forms and proportions of living beings. The Department of Applied Statistics of the University of London has just entered upon the occupation of the magnificent biometric laboratory provided largely by the enlightened generosity of the Drapers' Company at University College. Professor Karl Pearson has signalised this important event by issuing four large quarto volumes dealing with the femur, the results of a research started more than 12 years ago "merely with the intention of illustrating the application of biometric methods to a special field of anthropometric inquiry." This work marks an epoch in the application of mathematics to the interpretation of the data of

anthropometry, and provides invaluable guidance to the anatomist who is set with the task of determining the meaning of one of the classes of the data which he collects.

In his preface Professor Karl Pearson tells us:

"The earlier stage of this memoir embraces the first five chapters—these chapters are essentially an illustration of the application of biometric methods to the study of a single long bone. With the remaining chapter of Part I. the transition begins, for as we started to study the individual characters of the human femur, we found ourselves led on to consider not only such characters in other races than the English, but also in the anthropoids and ultimately in a wide range of primates."

When Professor Pearson has achieved so vast a reform as the inculcation of truly scientific methods in the domain of biological statistics, it is peculiarly unfortunate that he should have marred this magnificent work and been led into grave errors by his attacks on anatomists and the biological method. While freely admitting that anthropologists who rely upon statistics and argue from figures in a grotesquely inadequate manner fully deserve to have the puerilities of their arithmetic exposed, one cannot be blind to the fact that in trying to carry the war into the anatomists' camp Professor Pearson has himself perpetrated much graver faults in biology than the mathematical lapses he is castigating in the work of the biologists. The statistical method may be particularly valuable for giving exact numerical expression to each character of a bone, for summing up its features, and expressing the extent of its conformity to the group to which it belongs. But it is clear from the suggestions made in this monograph that the biometric method is a hazardous and misleading guide to the interpretation of kinship and affiliation. We shall quote only one instance of the fallacies for which a reliance upon the statistical method must be held responsible, but it is of so flagrant a character as to make one deeply regret that Professor Pearson embarked upon such treacherous seas. He tells us that "accordingly the suggestion may be made that the *Cebidæ* are derived from a form approximating to the Tarsiidean, and the *Simiadæ* from a form approximating to the Lemurine group of the Lemuroids" (Sect. II., p. 314). However great the divergence of opinion may be as to the exact stages through which the descendants of some Eocene Tarsioid form passed to become an ape, all zoologists would unite in repudiating the possibility of a Lemurine ancestry for the apes. In a number of other instances the statistical method yields results that more nearly accord with the facts of biology; but the suggestions expressed in the series of diagrams in the latter part of Section II. make the reader sceptical of the usefulness of a method which can mislead so gravely. These criticisms are necessary lest a reform which transforms anthropometry from the plaything of dilettanti into the severe discipline of a real science should be seriously compromised, as it will be, if it is to be used as a guide to phylogeny, where it clearly is quite untrustworthy.

The authors define their ideas as to the value of biometric methods in anthropology in the following sentences (p. 257):—

"No form of anthropometry can be reasonably successful in racial differentiation if the measuremental functions do not adequately express changes in the racial character. It is the racial character which first appeals to the eye, and it is the business of the anthropometrician to be quite certain before he takes into general use any measuremental function that it really does reproduce numerically the phases of the character he desires to discriminate. ..... [Statistical work in anthropometry] is absolutely primary and the only road to safe generalisation. When the statistical and the appreciative methods are placed side by side, the former being based on fitly chosen measuremental functions, there cannot be for a moment a doubt as to which will give the better results—that is evidenced in every case by the ultimate appeal of the appreciative anthropologists to the very statistical methods—generally imperfectly handled—which they started by endeavouring to discredit."

But in making these claims the biometricians seem to forget that the aims of the statistical and the appreciative methods are not identical. Each method provides information which is complementary to that afforded by the other, and it is futile to call one primary and the other secondary unless the precise object of the work is clearly and specifically defined. Take, for example, the case of the anthropologist who is working in conjunction with an archæological party. His function is to estimate the age and determine the sex of the remains; to decide whether the body has been subjected to post-mortem treatment of any kind and, if so, to investigate its nature; to record the position of the bones and to decide whether displacements are due to the action of gravity in a decomposing corpse and, if not, what the significance of the disturbance is; to study peculiarities of structure, whether they are due to congenital causes, injury, or disease; and, finally, to form an appreciation of the distinctive individual traits of the body and assess their racial, social, and other significance. These are aims that do not come within the scope of the statistician's functions, which are to assess the degree of conformity of this individual with groups of similar remains of known age and provenance. It is merely quarrelsome to insist that one of these functions is of primary and the other of secondary importance.

Putting aside these defects, into which the authors have been led by a not unnatural wrath aroused by slovenly work on the part of certain anthropologists, we can only admire the vastness of the scheme of work suggested by this great monograph and the thoroughness with which the enormous labour of expressing in figures the femur's distinctive features has been carried out. After working through this formidable array of mathematical learning the reader feels that there is still a good deal of the femur's character that is not expressed in the figures. For the bone is part of a living organism in a perpetual state of flux; it is constantly being rebuilt and refashioned in accordance with a multitude of factors that cannot be expressed merely in figures. Professor Karl Pearson is to be congratulated on the excellence of the two volumes of plates, and the way in which the volumes have been produced.

MEDICINE AND THE ALLIED SCIENCES.

By SAMUEL FOMON, Ph.D., M.D., Major, Medical Reserve Corps, U.S.A. London and New York: D. Appleton and Co. 1919. Three volumes and key with desk index. Pp. 2684. £5 10*s*.

THIS is a text-book—or rather a compendium of many text-books—presented in an original way for the benefit of the student whose memory, it is hoped, will be systematised by its use. The method consists in giving "general outlines" in the form of central memorisable data around which the special peculiarities of each subject can be grouped. The advantages claimed are as follows: (1) To convey in the briefest time-saving manner all that is known about a given subject; (2) to impress such knowledge upon the reader's memory in logical sequence and to show the inter-relations of all divisions of medical study; (3) to instruct a student how to weave together these various facts into a complete study of each disease and its treatment, whether it be medical or surgical. The compilation has evidently been a labour of love to the author, and to those who in their early days found delight in Mr. Bradshaw's correlation of times and events will make a successful appeal. But to the mind that lives not by ratiocination alone these three bulky volumes may prove a little burdensome. The text and illustrations are clear, there are some useful lists and tables, and every medical library would find the book useful for reference.

ORIGINE, EVOLUTION ET TRAITEMENT DES MALADIES CHRONIQUES NON CONTAGIEUSES.

By J. DANYSZ. Paris: J. B. Baillière et Fils. 1920. Pp. 132. 5 francs.

IN this short monograph the author sets forth the theory that certain chronic non-contagious diseases such as urticaria, asthma, and the like, are due to the presence of a protein antigen in the intestine, and that the treatment therefore should be carried out on anti-anaphylactic principles. The first part of the book consists of a short, simple description of the phenomenon of anaphylaxis and the theories of mechanism and causation. The second part deals with a series of cases treated by

the author, starting from the standpoint that the diseases in question are due to an error of metabolism, in which the intestine fails to deal naturally with albuminoid substances and bacterial proteins, and in which, therefore, a protein antigen is assumed to be present. The author's method of treatment is a course of subcutaneous inoculations of autogenous or stock mixed vaccines of intestinal bacteria, including coliform bacilli, enterococci, unidentified diplococci, and streptococci. There are 260 cases recorded. They include cases of urticaria, eczema, psoriasis, asthma, neurasthenia, albuminuria, dysmenorrhœa, menopause, mucous colitis, intestinal toxæmia, dyspepsia, constipation, chronic rheumatism, in fact, most of the heterogeneous collections of obstinate chronic complaints which are generally associated with neurotic individuals. The third part of the book deals with immunity in relation to anaphylaxis.

Unfortunately, vaccine therapy will not cure all the chronic illnesses of man, and we have so frequently been disappointed in the past that we have learnt to adopt an attitude of suspicion, though we shall watch the course of this treatment with much interest.

A TEXT-BOOK OF INDIGESTION.

By Dr. G. HERSCHELL. Fourth edition, revised and rewritten by ADOLPHE ABRAHAMS, O.B.E., M.D. Camb., M.R.C.P. London: Edward Arnold. 1920. Pp. 228. 10*s*. 6*d*.

THE first 68 pages of the late Dr. George Herschell's book, which has been remodelled and rewritten, deal with the process of normal digestion, the nature and causation of indigestion, and the investigation of the patient. The latter includes the usual routine examination, also all the modern methods of investigation—intragastric technique, test meals, X ray examination, examination of the stools—and one is particularly glad to see that the inquiry into the history and symptoms of the patient receives special attention. A short account is thus given of the subject, the matter being well selected and described. A consideration of organic diseases of the stomach then follows. This is an addition to the volume, former editions dealing only with functional disorders. It is disappointing to find that they are treated of in a short and sketchy manner more reminiscent of a text-book of general medicine than of a special treatise on the stomach, so that the alteration hardly seems to be justified. However, a considerable amount of useful information will be found, more particularly in the sections devoted to treatment. All forms of functional disorder are regarded as of nervous origin, except "acute indigestion," which may be due to the ingesta in a normal individual, or otherwise occurs in an exhausted subject, or one suffering from "congenital relative hepatic insufficiency." The classification of nervous indigestion is that usually given in text-books. Gastric atony and gastroptosis are both described under the heading of "sensory disturbances," which is no doubt an oversight. Pancreatic indigestion and gastric disturbances due to disease outside the stomach are shortly referred to. The appendix on the preparation of foods remains substantially unaltered.

EVENING PLAY CENTRES FOR CHILDREN.

By JANET PENROSE TREVELYAN. London: Methuen and Co. 1920. Pp. 182. 5*s*. net.

PERHAPS Mrs. Humphry Ward's most abiding work consisted in her wide-eyed sympathy for the London child. From the Passmore Edwards Settlement in Tavistock-place the movement for starting schools for invalid children originated, as well as this fruitful idea of evening play centres. Dealing mainly with the beginnings in London, Mrs. Trevelyan also describes the impetus given by recent official recognition and grants to the movement throughout the country. Chapters on vacation schools and organised playgrounds also sketch these cognate and important topics. We are shown how the out-of-school education of the city child may be of greater social importance than its academic curriculum. The need merely to relieve existing miseries of childhood is very pressing. A care committee of South London stated (p. 29) that it had carefully investigated the cases of 100 children from one school, and that 67 of these were found locked out of their homes till 7, 8, or even 9 o'clock at night. And of these 67, one-third were under 7 years of age. This was borne out by an appeal received from the owner of a jam factory in the same district, who offered to defray part of the cost of a play centre, if it could be established near his works, because the children used to come down to the factory gates in the evenings and cry till their mothers came out. The successful teaching of these little vagabonds is related—how steadily and with great perseverance social responsibility and the need to play the game by their neighbour was woven into their conscience. Attendance being purely voluntary, the children go because they want to do so. An evening's exclusion is a punishment for the unruly or disobedient. When we read of one centre (Stepney) attracting an attendance of over 1100 in an evening it is evident that someone was putting in effort and cost, but it was only after 20 years, as the book records, that London awoke to the fact that the playtime of her children was her own concern. Now half the cost is borne by the Board of Education and half the remaining cost by the London Authority, so that one-quarter of the money spent in this movement has still to be found by voluntary effort. The movement has a wide public future before it towards recreational development for the whole community. The schools are destined to become social centres of the greatest importance in national economics, for play is nature's education of the senses and emotions. Here especially is there the opportunity for moral training. The neglect in cities cannot be allowed to persist. That way lies social unrest.

The book will be widely read and deserves careful study. What Mrs. Ward in the preface says of London—that there are 32 centres in being and 200 needed—applies with equal force to the rest of the country in both its urban and its rural districts.

JOURNALS.

British Journal of Children's Diseases. Vol. XVII., January-March. Edited by J. D. ROLLESTON, M.D.—In a paper entitled "Some Observations on the Medical Treatment of Infantile Paralysis" Dr. Charles Mackay emphasises the importance of early diagnosis in the treatment of this disease. In the early stages he condemns massage and electricity as not only useless but harmful, and recommends immediate and complete anatomical rest for the paralysed muscle. He considers that muscle re-education should not be begun until pyrexia, pain, and tenderness have ceased, and should be continued for the next two years at least.—Mr. T. H. Gunewardene reports a case of Leukæmia with Scalp Nodules, with a description of the post-mortem examination.—In an article on Preleukæmia in Infancy Dr. Gordon Ward gives an account of the condition described by Professor Martelli, of Naples. This writer has given the name of preleukæmia to a large class of cases sometimes denominated von Jaksch's disease, sometimes leukanæmia or pseudoleukæmia or secondary leukæmia, and characterised clinically by anæmia and splenomegaly. According to Professor Martelli, these cases are potentially leukæmic, and if the disease is not checked by treatment may die of leukæmia. The preleukæmic condition may rise from several factors, such as syphilis, tuberculosis, sepsis, or malaria acting on an inherently defective organism. Dr. Ward, however, is of opinion that the unknown cause of leukæmia in the adult never produces anything but leukæmia in the child and that the cause of preleukæmia in the child will never produce the adult form of leukæmia even in the adult.—Dr. W. J. Rutherfurd reports a case of Cardiac Angina in a child of 6 years, the anginal attacks being due to pericarditis, and has collected other instances from literature. There was no history of rheumatism or chorea in his case.—In a paper on Some Clinical Forms of Typhus Fever in Children, Dr. A. Stroë, of Bucharest, states that typhus in children is generally mild, its duration being usually from 7 to 12 days. In 25 per cent. of the cases the eruption is absent; in other cases it is transient or very sparse. In some cases, however, especially in children over 7 years of age, the exanthem presents the same characters as typhus in the adult. Bronchitis is frequent, but areas of congestion are exceptional in children. Signs of profound intoxication are extremely rare. The diagnosis may thus

present great difficulties, but considerable help is afforded by the Weil-Felix reaction.—Dr. T. McCririck reports a case of Tuberculosis Verrucosa Cutis of the Foot in a boy, aged 12, who had probably been infected by his sister, who was suffering from multiple tuberculous abscesses.—A case of Isolated Disease of Tarsal Scaphoid: Köhler's Disease, is recorded by Mr. P. Maynard Smith.—A case of Congenital Redundant External Meatus; Repeated Abscess-Formation; Excision, is related by Dr. Dan McKenzie, who has been unable to find more than eight other cases on record of this congenital malformation. In the majority the orifice and external meatus are described as being divided by a septum or partition into two canals, one of which ends blindly, while the other leads to the tympanic membrane. Abscess formation does not seem to have been encountered in any previous case.—The abstracts from current literature are devoted to acute infectious diseases and dermatology and syphilis.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

COLLOSOLS.

(BRITISH COLLOIDS, LTD., 22, CHENIES-STREET, LONDON, W.C. 1.)

COLLOIDAL preparations are increasing in interest from the therapeutic point of view, it being freely claimed that the usual medicaments are more effective when presented in the form of a "sol." This conclusion is based on the fact that the vital processes of the organism are colloidal. The medical profession have now to deal with the claims set out. There are several preparations at their disposal for such an inquiry, as is evidenced from the specimens of "sols" recently submitted to us by the above company, which include collosol quinine, iodine, argentum, sulphur, and manganese. The chemical behaviour of these preparations is peculiar. They do not respond in some instances in the way that the classic salts do, and, we imagine, would give much trouble to the student asked to determine in an examination what active constituent (metallic or non-metallic) was present. With well-recognised reagents, for example, the colloidal preparations of the metals give negative or confusing results. The colloidal state must be got rid of before the normal reactions of ordinary salts can be obtained. This, of course, shows that a different physical condition exists when the element is in the colloidal form. Colloidal quinine, for example, is not immediately bitter to the taste, nor does it give a fluorescent solution when sulphuric acid is added. Collosol argentum does not yield the usual precipitate of silver chloride when hydrochloric acid is added, though chloroform takes out some iodine from collosol iodine, and caustic soda and a lead salt present with collosol sulphur soon yields a conspicuous darkening due to formation of lead sulphide. The therapeutic advantages suggested by the use of "sols" are of interest, and the claim that the activity of the medicament is greatly increased, requiring a much smaller administrative amount for a definite effect, will attract attention. So far as we know, there is no evidence as to the fate of the "sol" in the gastric or intestinal secretion. Should there be any reversion the view of the increased therapeutic efficacy of the "sol" could hardly be sustained. These preparations afford an interesting study under the ultra-microscope, and medical men are invited to inspect recent innovations in this direction.

NUTRESCO PREPARATIONS.

(NUTRESCO, LTD., NUTRESCO HOUSE, DOLBEN-STREET, BLACKFRIARS, LONDON, S.E. 1.)

The foundation of the "Nutresco" products is meat substance hydrolysed by a special and improved process. Nutresco is thus sharply differentiated from meat extractives, and in fact consists chiefly of albumoses and peptones. The product is contained in several preparations, including a malt combination, a syrup, an invalid food, chocolate, biscuits, and wines. The fluid preparations turn solid when bromine water is added, proving the presence of a high proportion of proteoses, and the wines gave a big precipitation with the same reagent. The malt admixture showed marked diastasic action, and the invalid food on analysis gave the high figure of 24·0 per cent. of proteins, due to both casein and digested meat substance. The chocolate contained, according to our analysis, 10·0 per cent. of protein. These preparations are correctly described, and offer a choice of special nutrient material to the medical practitioner.

(1) COD-LIVER OIL; AND (2) FRUITINE CONFECTION.

(ALLEN AND HANBURYS, LTD., BETHNAL GREEN, LONDON, E.)

1. There has, of course, been some disturbance during the war in regard to the supply of cod-liver oil, and it is of interest to note that the normal supplies are being restored, and the above firm announce that their "new season's" (1920) oil is of good standard quality, and that the livers are yielding rather over the average percentage. The oil contains the maximum amount of unsaturated fats and the minimum of free fatty acids. The sample submitted to us certainly shows a high standard, and the vendors have probably satisfied themselves as to its growth-promoting constituent (the fat-soluble factor). 2. The "fruitine confection" has a well-known laxative fruit basis, and is free from artificial purgatives. It is quite pleasant to the taste, and infants and young children, we are informed, show no objection to taking it. In preparation care is taken to preserve the accessory factors of the fruit intact.

AMBRIODIN (CENTAUR).

(THE CENTAUR CHEMICAL CO., LTD., BASSISHAW HOUSE, BASINGHALL-STREET, LONDON, E.C. 2.)

We have confirmed the composition of this compound which contains ammonium bromide (5 gr.), potassium iodide (1 gr.), combined with a laxative. The formula is well known to medical men as of use in bromide treatment, but the tablet offers a convenience in administration. Advantages are claimed in the treatment of epilepsy by this combination as opposed to the exclusive use of potassium bromide.

DOLS' (VOLATALISE) FLANNEL.

(DOLS AND CO., LTD., HUDDERSFIELD.)

There is some novelty in the suggestion of the application of this fabric as a therapeutic measure. It is purely and simply flannel impregnated with a certain iodine compound which yields iodine to the affected part, particularly when in contact with a moist skin, as during exercise. Claims are made in favour of its employment in the alleviation of the pains of rheumatism, lumbago, and injured muscles. It will be interesting to receive an endorsement of these claims, but, at all events, iodine is recognised as a factor in relieving the class of disorders referred to, and the method of application suggested is convenient. The flannel is of a dark-brown colour and readily yields iodine on treatment with nitric acid.

MABELA.

(GOVERNMENT OF THE UNION OF SOUTH AFRICA, 90, CANNON-STREET, LONDON, E.C. 4.)

The analysis of this product was as follows:—

	Per cent.		Per cent.
Moisture	9·60	Fat	2·40
Mineral matter ...	1·60	Fibre	5·64
Protein	10·97	Sugar	2·69
Carbohydrates ...	67·10		

It is prepared from a seed grown in Natal known as mabela, which seems to be identical with millet. Locally the raw material is known as Kaffir corn, which has been used largely for the manufacture of beer. This beer has antiscorbutic properties, according to a report on scurvy in South African Native Labour Corps by Dr. Hamilton W. Dyke, published in THE LANCET of Oct. 19th, 1918. Large draughts of Kaffir beer, according to this report, conferred an immunity from scurvy upon the Kaffir troops. Germinating seeds are known to contain antiscorbutic materials. The meal we examined shows nutritive properties from a chemical point of view, but according to this examination it does not disclose an advanced malting stage, since the soluble matter in cold water only amounted to 5·75 per cent.

THE LANCET.

LONDON: SATURDAY, MAY 15, 1920.

A Dual Alliance against Venereal Disease.

EARLY in 1917 the Borough of Portsmouth opened a clinic for the treatment of persons suffering from venereal diseases, which has since been enlarged and is generally admitted to be doing good work. In February last Dr. A. MEARNS FRASER, medical officer of health for the Borough, presented to his Health Department a special report on means for the prevention of the same diseases. The chief duty of a sanitary authority is, as all will agree, preventive rather than remedial. In this able and, in parts, moving little pamphlet Dr. FRASER set forth the case for prevention, and concluded by recommending his local authority to take the necessary steps to spread a knowledge of the means of self-disinfection, so that those who insist upon satisfying their sexual appetites by promiscuous intercourse should be in a position to protect themselves, and possibly their innocent families, against loathsome disease. On March 3rd the Portsmouth Health and Housing Committee approved and adopted Dr. FRASER'S report and decided to urge the Council to empower them at once to act upon it. On April 27th the Council itself confirmed this decision, and the principle of popularising the methods of venereal prevention among the male population is now the official policy of the municipality of Portsmouth.

Where others have discussed Portsmouth has acted. The manifold difficulties and objections raised by both parties to a warm controversy have been more than sufficiently studied during the last few months. Some of the objections have been too much in the nature of Aunt Sallies stuck up expressly to be knocked down by cogent and clever argument. Advocates of self-disinfection are apt to assume as prevalent among their opponents the mediæval view in favour of retaining disease as a method of enforcing chastity. No responsible body of thinking people now takes this view or regards fear as a useful deterrent from venereal infection. Many of the opponents of self-disinfection profess to see nothing in it but the issue of prophylactic packets from an automatic machine. Setting aside bogies and bugbears, there remain two difficulties keenly felt by many who are not fanatics in regard to popularising self-disinfection. The first is in essence that in so far as the male genital tract is relatively easy to disinfect, and the female relatively difficult, to advocate self-disinfection is to set up that different moral standard as between men and women against which it is increasingly the spirit of the age to protest. It is said that to advocate a method of disinfection applicable only to men is to revive the spirit of the ill-famed C.D. Acts; in a word, to make fornication safe for men. To this it may be replied that whereas to fix a different moral standard is wilful, the anatomical difficulty is not of our own seeking, is at present inevitable, and is to be overcome by improvement in technique. Illustrations do not carry us far, but the analogy might be suggested of an armoury in which the curator, unable, as he would like, to enforce perfect orderliness on those using it, should yet insist that swords be cleaned after use in case they should be put back in the wrong scabbards. And in the end the scabbards would remain clean. The other real difficulty, also of a fundamental and reasonable nature, is felt by those who fear the effect of prophylactic propaganda upon the mind of the young man or woman growing up to the consciousness of virility and sexual potency. How can information be conveyed for making promiscuous intercourse safer from risk of infection without suggesting to the adolescent that his sanitary authority expects him to be clean but not continent? This is a crucial point to which earnest groups of seekers have devoted attention without as yet finding a solution of wide acceptance.

Portsmouth has cut the Gordian knot. Before the Council meeting all the omens were unfavourable to the acceptance of Dr. FRASER'S report except by a bare majority and in a controversial atmosphere. Wisely construing his duties as chief magistrate and first citizen, the Mayor of Portsmouth called a meeting at which the various conflicting interests were represented and which was addressed by Dr. FRASER. The reasonableness of the proposals struck home, and after very full discussion the supporting resolution (no formal vote was in order) was proposed by the Rural Dean, seconded by Bishop INGHAM, and supported by the President of the Free Church Council. With one corollary: that along with the municipal action in the domain of hygiene, there should run concurrently a voluntary campaign to promote chastity. Evidently some of those present at the meeting were not satisfied that they had done all that they could in social, educational, and moral directions. Dr. FRASER'S demand for a hygienic campaign undoubtedly precipitated a moral campaign. For the statistician this may be unfortunate, as the moral campaign will invalidate the hygienic as a scientific experiment. But for all other thinking people the prosecution of the two campaigns side by side may well suggest a solution for one of the most pressing problems of civilisation.

The Cæsarean Scar.

SINCE the magnitude and exhaustive nature of the task achieved by Mr. EARDLEY HOLLAND is only faintly reflected in the brief abstract of his paper at present available, the genesis of the discussion on Cæsarean section at the joint meeting of Obstetrical Societies, reported on pp. 1062–68 of this issue, may be recalled. In a letter dated Feb. 10th of this year, addressed to obstetric surgeons in active hospital practice throughout the country, Mr. HOLLAND sought the coöperation of his colleagues in an attempt to obtain definite information on the risk of rupture of the uterine scar after Cæsarean section. In order to ensure a uniform plan for this collective investigation he enclosed sample tables compiled from his "follow-up" records of cases from the London and City of London Maternity Hospitals under these headings: (1) Indication for and year of operation; (2) age of the patient; (3) her parity; (4) period of pregnancy or labour when Cæsarean section was performed; (5) the type of uterine incision; (6) the site of the placenta; (7) the method of suture and material used; (8) the presence, absence, or degree of pyrexia during convalescence; (9) the interval in years since the operation; (10) the condition of the

infant; (11) whether precautions against pregnancy had been taken.

The 84 cases of Cæsarean section recorded in the sample tables, from which were excluded sterilised and fatal cases and those in which the first Cæsarean section had been performed before 1912, were divided into six groups. One group contained 49 cases who had no subsequent pregnancy, though unsterilised; another, 10 patients whose subsequent pregnancy culminated in delivery by the natural passages; a third included 15 cases who had repeated Cæsarean sections. Then followed 5 cases who aborted, 4 now pregnant, and 4 (a fifth case since recorded is included in Mr. HOLLAND'S account) whose scar had ruptured. Three cases appeared in more than one category. These were the figures given by Mr. HOLLAND in his original questionnaire to intending collaborators, where he suggested that these results, as far as they go, would seem to show: (1) that Cæsarean section is followed by relative sterility; (2) that rupture of the scar, though relatively rare compared with the number of Cæsarean sections, is not so rare when compared with the number of patients who subsequently become pregnant and go to term, and especially with the number in whom delivery by the natural passages occurs. So cordial was the response of the obstetric surgeons (one had himself traced out and visited 30 cases) not only in supplying material but in arranging it on the lines suggested, that Mr. HOLLAND was able to incorporate in his opening address figures received only a short time before its delivery.

The need for the investigation cannot be doubted. The discussion on the treatment of ante-partum hæmorrhage in the morning session of the same meeting showed clearly the increasing tendency to regard as indications for Cæsarean section conditions, such as eclampsia and placenta prævia, that may not recur. In these circumstances the dictum, "Once a Cæsarean section, always a Cæsarean section," quoted by one of the speakers, is open to question, provided the scar can be relied on to stand a subsequent labour. It was on the factors undermining the strength of the scar that the discussion chiefly turned. Professor MUNRO KERR advocated an alternative in position and direction to the classical uterine incision. Mr. HOLLAND regarded the material used for its suture as of primary importance, and though the number of actual ruptures is small the case against the catgut suture for this purpose seems strong. Reference to the discussion will show that most of the speakers were agreed on this point. A suggestion by Dr. J. D. BARRIS that in cases of doubtful asepsis with a febrile puerperium the scar should be excised at a later date deserves consideration in the rare cases in which a woman is sufficiently anxious for another child to submit thereto. No amount of reassurance by a doctor can really remove the terror of the word operation, aroused even by a suggested incision of an abscess. In this connexion the "unexplained" relative sterility after Cæsarean section seemed to cause surprise among some members, to whom this form of delivery appears a commonplace. The psychological cause emphasised by Dr. CARLTON OLDFIELD and Dr. FURNEAUX JORDAN surely affords sufficient explanation.

A very useful practical point emerged from the drawings of sections of ruptured scars shown by Mr. HOLLAND. In every case the muscle had retracted, and the scar consisted of fibrous tissue covered by peritoneum outside and endometrium inside. It is in these thin scars, which follow infection of the wound, that rupture is liable to take place. The old ununited muscle surfaces, covered by decidua and blood clot, are deceptively thick in the recently emptied and retracted uterus, and operators were warned by Mr. HOLLAND from his own experience not to mistake them for freshly torn surfaces and suture them together as being such. Only by a careful study of Mr. HOLLAND'S inquiry will its real importance become apparent. Certain members expressed regret that he had not gone two years further back and thus joined his figures to those collected by Dr. AMAND ROUTH in 1910. The connecting link may yet be supplied, but it would be ungrateful to expect still more back records from an observer who has, moreover, given excellent reasons for his self-imposed restrictions in scope. Even were his statistics of less intrinsic importance they would be of value as a model for collective clinical investigations which might with advantage be carried out in every branch of medicine and surgery.

Red Cross and the Voluntary Civil Hospitals.

A PUBLIC appeal is imminent emanating from the Joint Council of the British Red Cross Society and the Order of St. John of Jerusalem in England, supported by a general survey of the hospital situation throughout England and Wales written by Sir NAPIER BURNETT. It may be remembered that at the beginning of this year Sir ARTHUR STANLEY, presiding over a meeting held at St. Thomas's Hospital, of which charity he is the honorary treasurer, promised that the Red Cross Society and the Order of St. John would make the assistance of voluntary hospitals part of a great peace programme; and the survey which Sir NAPIER BURNETT has written proposes to show the volume of work done by the hospitals and their present financial position as a justification for the distribution of funds. The survey, as far as it at present goes, will not take the London voluntary hospitals into consideration, for they have the assistance of such great central organisations as King Edward's Hospital Fund for London and the Metropolitan Hospital Sunday Fund, among others; and there is a further fitness in this limitation, that the critical position of the metropolitan hospitals is already under the favourable consideration of the Government.

The survey, we are informed, will show the amount of work done during the year 1919 by each individual hospital and the income and expenditure and annual cost per bed, while spot maps will indicate the *locale* of the hospitals and the ratio of their beds to the surrounding populations. Upon such data the Red Cross Society and the Order of St. John will give their help, and a bold appeal will be made to the public for a sum of £1,000,000 per annum to be distributed in the form of grants supplementary to the individual efforts of the hospitals themselves. That this would be the policy shortly to be pursued has already been indicated in the columns of THE LANCET, and it is indicative also of what is known to be the intention of the Government in future legislation in respect of medical services. The magnificent work of the voluntary hospitals is to be supplemented and not supplanted.

It must be known that one way in which the charities might have helped themselves is economically barred. The depreciation in their invested funds is such that the sale of securities can be a wise one only in very exceptional circumstances. Any general realisation of these funds would mean a vast aggregate loss to the charities, as is shown in Sir NAPIER BURNETT'S scheme by the figures relating to a group of nine voluntary hospitals. We may be certain that the position indicated by these figures is typical of the story that many a hospital treasurer could tell.

The text of the scheme will be published in THE LANCET next week, and will, in the meantime, be in the hands of our readers as it appears in the daily press. We believe that they will agree with us in thinking that the cause of the hospitals will prevail with the public. Given a well-informed and sound scheme, the public will certainly come to the aid of the voluntary hospitals, whose work, be it understood, cannot possibly be wholly replaced in spirit or in scope by any State effort, though the needs of the sick and injured can be ministered to by money coming from the State, from the municipality, or from both.

The Fellowship of Medicine.

THE Fellowship of Medicine is conducting a propaganda which is reaching into many of the largest medical centres, and the result has been a steady flow of inquiries regarding the possibilities of medical study in London, especially from Canada and the United States. This shows an interesting development of possible activities. The medical men who attended, and sometimes crowded, the courses arranged by the Fellowship in last year's session were chiefly serving in the armies; they were brought together in exceptional circumstances, and, in some instances, their military obligations dictated their post-graduate work. This season the graduates are entering the courses on their own initiative, and at their personal expense. Their number is still a matter of speculation with the executive, but each week, we are informed, adds names to the register. It cannot be too strongly insisted that the future of London as a great post-graduate centre will be largely determined by the opportunities offered to overseas visitors during the immediate future. The first call is, of course, for clinical demonstrations, and particularly for short intensive courses in special subjects, and we trust that these will be arranged without delay, for the greater the preliminary notice the easier will it be to answer the questions of inquirers, to complete lists, and to ensure order in the arrangements. A time-table should also be drawn up to cover the holiday season. Work slackens in London from the middle of July to the end of September; yet it is during this vacation period that many men will fit in a course of study, as is shown by the dates specifically mentioned in letters of inquiry. We hope that the enthusiasm behind the movement for making London a great post-graduate centre will be maintained; it received such a good send-off that the danger of relaxation of effort on the part of its supporters must be guarded against. The more energetically the organisation is befriended at the first the more sure will be its complete success in the near future. The English-speaking post-graduate wants to come to London for his studies, and his capital city should give him what he needs.

Annotations.

"Ne quid nimis."

THE DINNER TO SIR GEORGE MAKINS.

A COMPLIMENTARY dinner to Sir George Makins, President of the Royal College of Surgeons of England, and lately consulting surgeon to the British Expeditionary Forces, was held at the Wharncliffe Rooms of the Hotel Great Central on Monday evening last, Sir Cuthbert Wallace presiding. The large company was representative of the many directions in which Sir George Makins's learning, industry, and powers of organisation have been employed for the public good. His colleagues on the staff of St. Thomas's Hospital were there in force; Sir John Goodwin, Director-General of the Army Medical Department, and Sir James Porter, late Director-General of the Naval Medical Services, represented the long connexion with the two Services; Sir John Bland-Sutton was present not only as a personal friend but as Vice-President of the Royal College of Surgeons of England, which corporation was also represented by Mr. S. F. Cowell, the secretary; Sir Walter Fletcher for the Medical Research Council, Sir John MacAlister for the Royal Society of Medicine, Dr. Alfred Cox for the British Medical Association, and Mr. F. G. Hallett for the Conjoint Examination Board of the Royal Colleges, were also present with many professional leaders, brother officers, and personal friends. Mr. Max Page acted as honorary secretary to a thoroughly successful dinner.

The toast of the evening was given by Sir Cuthbert Wallace in simple terms of great intimacy. As pupil, as assistant, as hospital colleague, and as comrade in two great wars he was able out of personal knowledge to construct a telling picture of his friend and chief. The toast was seconded in four directions. Sir John Goodwin bore testimony to the enduring industry and unfailing tact of Sir George Makins in dealing with service problems and in conducting service work. Mr. E. F. White presented Sir George Makins as a model consultant for the general practitioner and for the patient alike, being wise, helpful, and generous. Sir John Bland-Sutton spoke of long association with Sir George Makins in promoting the study of clinical pathology, while assuring the audience that no one had ever better filled the dignified post of President of the Royal College of Surgeons of England. The last of the seconders was Sir George Savage, who appeared in the character of Sir George Makins's instructor in mental science and in the arts of fishing and mountain-climbing, and who gave a humorous sketch of life at Bedlam some 40 years ago. The proposer and the four seconders, though speaking from deliberately different points of view, managed to compose one portrait of a highly accomplished, determined, and sincere man, and to do this without any of the usual exaggerations. Even among a gathering largely composed of personal friends, Sir George Makins found it difficult to reply to such embarrassing and straightforward testimony to his merits; but he may rest assured that what was said of him at the complimentary dinner accords with what his professional brethren at large have for a long time said, and felt.

SOLUBLE LEAD IN CASSEROLES.

REFERENCE has already been made in THE LANCET[1] to the subject of soluble lead in casseroles made of glazed pottery ware. A number of these casseroles have now been examined, including specimens of French, English, and Dutch makes. With the exception of two makes, which were described as leadless glaze, all the casseroles yielded some soluble lead on boiling with a 1 per cent. solution of citric acid. The amounts of lead extracted varied from 0·3 to 19 mg. of lead monoxide per square decimetre of the glaze. The lead was not completely extracted by the first treatment, but continued to be extracted with each subsequent treatment. Some determinations were also made of the amount of lead extracted when fruit and vegetables were cooked in the casseroles. The results confirmed those obtained with the citric acid solution, and we hope to publish shortly the full details of the inquiry which was made at the Household and Social Science Department of King's College for Women by Miss Helen Masters.

ROYAL INSTITUTE OF PUBLIC HEALTH: THE CONGRESS IN BRUSSELS.

THE final programme of the Congress of the Royal Institute of Public Health, to be held in Brussels from Wednesday, May 19th, to Monday, May 24th, has now been agreed upon, and it is clear that the proceedings will be interesting and instructive. His Majesty the King of the Belgians will be present at the inaugural meeting on Thursday, at 11 A.M., in the Palais des Académies. A meeting of reception will be held in the same building on Wednesday, at 9 P.M., by the committee of organisation, to which delegates and members will be cordially welcomed. The executive of the Congress regret that owing to the shortness of time it has been impossible to send individual intimations.

MEDICAL PRACTICE IN NORWAY.

WE have received from a correspondent in Norway an account of a recent session of the Storthing at which the introduction of certain estimates for the coming Budget was made the occasion for a general review of the state of medical practice in town and country. The discussion centred about a supplementary vote of Kr.25,000 towards the pay of State medical officers, and the alternative of a vote of Kr.40,000. This was rejected, and the original sum of only Kr.25,000 was passed by a large majority. Judged by figures alone, this incident might be regarded as one of minor parochial interest; but it is significant as an index of the sentiments of the country towards the medical profession. Since the introduction of compulsory insurance against sickness, and the adoption of the principle of remuneration according to work done instead of by annual fixed sum for each insured person, there has been a considerable increase of material prosperity in the medical profession. Only in a few instances has the principle of payment according to work done been abused by medical men who have made much out of minor ailments. On the other hand, this principle has been an admirable incentive to conscientious treatment of ailments which were apt to suffer neglect under the old system of club sickness insurance. But the point on which the community at large is most at variance with the medical profession seems to be the neglect of country districts in favour of the towns, where every medical man can make a livelihood, even though the supply of doctors is in excess of the demand. Many large country districts, on the other hand, are left without any medical aid although substantial grants by the Government and local authorities are made. It was pointed out in the Storthing that out of 150 new appointments in country districts, about 50 were vacant for want of applicants. Various remedies for this uneven distribution have been suggested, and Labour and Socialists have advocated the plan of financing the education of medical students who would, when qualified, be bound to serve an apprenticeship of so many years in the least populous country districts. But the more popular view seems to be that the system of subsidies should be strictly limited, and that by the automatic action of the law of supply and demand matters will soon right themselves. Already it appears that the improved economic status of the medical profession has resulted in a large influx of medical students to the University of Christiania, and it is anticipated that in a few years there will be no shortage of doctors in Norway.

THE ACTIVATION OF WOOD CHARCOAL.

AN important communication to the Chemical Society made recently should not escape the notice of active workers in the physiological and chemical laboratories, inasmuch as the use of charcoal as an absorptive, decolouriser, and clarifier, helps research work in so many directions. The authors, James C. Philip, Sydney Dunnill, and Olive Workman, have confirmed the observation that the absorptive power of wood charcoal is notably increased by prolonged heating, an observation which occurred in the course of investigations aiming at the improvement of defence against poison gas. Further experiments are in progress, but, so far, it has been easily established that the increase in the absorptive power of wood charcoal for gases effected by continued heating of it is paralleled by a marked increase in the power of the charcoal to remove methylene-blue from its aqueous solution. Further, animal charcoal, contrary to general belief, possesses no advantages over wood charcoal, and the activities of animal charcoal are even surpassed by a heat-treated wood charcoal. It is remarked that the decolourising power of a charcoal appears to be primarily determined by its physical structure and its surface development, and not by the presence of any specific admixture. Nitrogen and ash are ruled out as playing any part in the absorptive power of charcoal. Apart from gas absorption, a sample of vegetable charcoal was found to remove only 1 per cent. of methylene-blue from the standard solution employed, but the same charcoal heated for 20 hours at 870° C. removed no less than 45·4 per cent. of the dye. Similarly it is concluded that the efficiency of animal charcoal is a function of the heat treatment it has received, and can be increased to a very notable extent. Thus a sample of animal charcoal which removed 17·8 per cent. of methylene-blue from solution before heating, removed 69·6 per cent. after being heated for 18 hours at about 800° C. We remember in our student days the lecturer on chemistry, in demonstrating the absorptive powers of charcoal, insisted upon the incineration of cocoanut shell in a crucible filled with sand some hours before the lecture experiment. As a result he always succeeded in showing practically the complete absorption of

[1] THE LANCET, May 25th, 1919 (p. 907) and June 7th, 1919 (p. 1001).

ammonia gas. A tube over mercury was filled with ammonia gas, and then a few pellets of the freshly-prepared and heated charcoal were introduced. The mercury rose rapidly to the top of the tube, and there was practically no gas left. This property of charcoal was subsequently utilised by Sir James Dewar in the production of the high vacuum, the study of which led to results of considerable scientific importance. The remarkable activation of charcoal by the comparatively simple method indicated in these researches may well have pharmacological significance. Charcoal has long been used in gastric disturbance with eructation, the element, it was claimed, serving as an absorptive, not only of gas, but of fluid in hyperacidity. The charcoal employed for this purpose was probably in most cases stale, and it remains to be seen if applications of activated charcoal prove more effective.

EROSIVE VULVITIS.

ACCORDING to Dr. Thomas Latane Driscoll,[1] of Richmond, Virginia, this condition is not generally recognised, although the corresponding disease in the male, known as erosive or gangrenous balanitis, has been known for several years. Like Vincent's angina and ulcero-membranous stomatitis, it is due to the symbiosis of the fusiform bacillus and spirillum. The predisposing causes are filth and prostitution, with attending frequent copulation and exposure to unnatural sexual relations. Dr. Driscoll reports three cases in women who were inmates of the jail at Richmond and had all been convicted of prostitution. The genitals were extremely dirty, and showed a large amount of discharge from the diseased focus and from the vagina, so that ideal conditions were present for the growth of the specific organisms. In each case there was extensive ulceration of the part, with a slight amount of local œdema. In the most severe case there was an almost complete destruction of the vulva, the labia and clitoris having completely sloughed away. In all three cases the inguinal glands were enlarged without signs of suppuration. There was a slight degree of toxæmia and the patients showed a tendency to melancholia. The Wassermann reaction was negative in all three cases. There was no response to antisyphilitic treatment, including arsphenamin. In conclusion, Dr. Driscoll states that erosive vulvitis may be suspected in the presence of persistent ulceration, with a negative Wassermann reaction and the clinical characters described above. The presence of fusiform bacilli and spirilla confirms the diagnosis, but it must not be forgotten that the infection may be superimposed upon other lesions of the genitals.

THE POSITION OF THE CITY BACTERIOLOGIST.

WE note with interest that a movement is taking place in the city of Belfast to appoint the professor of pathology and bacteriology as city bacteriologist, following the example set by Liverpool seven years ago. This arrangement, by linking up city and university more closely—an end desired by all who have the real concern of their University at heart—possesses advantages for both. The city is able to secure for its bacteriologist a man whose training, academic record, and ability in research have been tried and tested by the fact that he has secured a professorial chair. On account of his recognised standing his decisions on work submitted to him are at once accepted by the health authorities with whom he has to deal; being a professor, appointed and paid by the university, he has an independence which no purely city official can have. The university gains in being brought more closely in touch with city work and in obtaining material of enormous value in practical teaching, especially for those who are to adopt public health as a career. To take an instance specially applicable to a port like Liverpool—the control of plague by systematic rat examination. This is daily routine, and every student has an opportunity of seeing all the details, from the work carried out in the sanitary offices to the complete report by the bacteriologist, and that not once or twice, but every day if he should so wish.

Some fear that, under dual control, difficulties might arise in dealing with city councillors and health committees, by the very fact that the professor holds an independent post. Experience in Liverpool shows that these difficulties are imaginary. Cranks exist in lay or medical bodies, but, though they annoy, their influence is negative or passing. A further advantage lies in finance. In Liverpool, where the upkeep of the laboratory rests in the main on the city, the work done in it is not starved, as is the case with so many university laboratories, and will remain the case until our rulers come to realise fully that research can only be satisfactory when carried out in a well-equipped laboratory with a qualified and adequately paid staff. The Liverpool arrangement has worked well, and has fully justified the wisdom of the members of university and city who brought about the union. It has, of course, its weak points; one particularly is that pathology is not associated with the bacteriological department. Bacteriology and pathology cannot be separated with advantage, and it may be hoped that in Belfast the present connexion between the two subjects will be maintained. Should it prove necessary to divide the two departments, professors of equal status should be appointed. In any new scheme we would like to see a closer relation between clinical work and bacteriology and pathology. Both professors might be honorary officials of some hospital, infectious or otherwise, with free access to the wards and with the status of physicians. In this way only will research on the ætiology and treatment of disease be carried on with success.

CORONERS' JURIES.

THE inquest held recently by the Rotherhithe coroner upon the bodies of David and Ada Ayles, husband and wife, has been the subject of comment on account of Mr. W. H. Whitehouse having conducted the inquiry without a jury. The deceased were in poor circumstances, allegations were made that their deaths were due to starvation, and that a relieving officer had refused assistance which should have been afforded. On the other hand, apart from conflicting evidence given by lay witnesses as to the alleged shortage of food and money, Dr. R. C. Harkness, medical superintendent of the Bermondsey and Rotherhithe Hospital, where the luckless couple died, attributed their deaths to pneumonia, and stated that the woman was not emaciated, but fairly well nourished, and that the man, though naturally thin, did not give the impression of being starved. In the circumstances, it is difficult to see how a jury could properly have returned any other verdict than that given by the coroner, which ascribed death

[1] Archives of Dermatology and Syphilis, February, 1920.

to natural causes. It was a case, no doubt, in which in the exercise of the discretion given him by the Juries Act, 1918, the coroner might have summoned a jury without anyone suggesting that he was shirking unduly the responsibilities of his office. It was not, however, a case in which he was bound to have a jury, for whatever the conduct of the relieving officer had been proved to be, it could not have been a question of his having committed murder or manslaughter. As to the cause of death, with which alone the coroner was concerned, the medical evidence was conclusive. Whether it is desirable to dispense with a jury in coroners' courts for cases not likely to result in charges of manslaughter is a difficult question in the light of experience recently gained; probably a jury is generally desired by the public. The matter will no doubt be made clear when a Bill to amend the law of coroners' inquests is introduced. What is not clear at the present time is why the experiment is being continued. The conditions which brought about the Juries Act of 1918, and the Coroners' Emergency Provisions Act of 1917, providing for smaller juries at inquests, are now over, and both Acts were passed to have effect during the war, and for a period of six months thereafter.

ROYAL SOCIETY OF MEDICINE: SECTION OF SURGERY.

AT the annual meeting of the Section of Surgery of the Royal Society of Medicine there was a very interesting exhibition of specimens from the museums of the London hospitals illustrating innocent tumours of the alimentary tract and leather-bottle stomach. It is hoped to hold similar exhibitions from time to time. A gratifying feature of the session, now closed, has been the increase in attendance, and the thanks of the members are due to Sir John Bland-Sutton, the President, for his successful stimulation of the section.

THE WINDSOR COLLIERY INCIDENT.

WE briefly recorded last week the proposal of the employees of the Windsor Colliery at Abertridwr to become a registered society providing medical attendance. A South Wales correspondent writes that the position is much as follows:—

> In the past doctors have practised in the mining areas for as short a time as possible, desiring to make money, and, having done so, to leave the districts, which are not congenial for the permanent abode of professional men. The tendency has therefore been to undertake an excessive amount of work, obtaining for it the best scale of remuneration possible. Those who have been able to stand the work for 20 years or longer have retired on the proceeds. The proposed Medical Aid Society reduces the income of the practitioners when compared with the scale of earnings under the present method of procedure. Whether it will reduce the amount of work each man is called upon to undertake it is difficult to say. What appears to be wrong in the miners' proposal is not so much the income suggested as the number of doctors whom they propose to engage. What is wanted is more doctors, not more pay.

Our correspondent thinks that the position taken up by the medical profession has not been made very clear locally. It is stated in the *Western Mail* of May 3rd that, when the idea was first mooted, local practitioners agreed to the new procedure should it receive the sanction of the British Medical Association. The doctors who previously attended the miners and their families have now, politely but firmly, decided not to work the scheme, which, when submitted to the Association, was placed amongst the banned forms of contract practice. Nothing has been put forth to enable the miners to distinguish between the position of a whole-time medical officer of health working for the health committee of a town council, or a tuberculosis officer in charge of a sanatorium managed by a lay committee, and that which the proposed Medical Aid Society offers. The objection offered, that choice of doctor is lost, has some weight, for although under the arrangement the society intends choosing its own officers, it should be remembered that there was a 30 per cent. minority which voted against the new scheme, and which, if coerced into adopting it, will have their choice of doctor restricted against their will. The disfavour with which the Association regards contract practice in any form is based on the belief that a limitation in the scope of his practice will necessarily in the long run impair the quality of the service offered by the practitioner. The Windsor colliers should be put in possession of the evidence upon which it is based, as they would then see that their proposed society will benefit neither themselves nor the doctors.

THE PREVALENCE OF HERNIA.

THE incidence of hernia in the general population is a subject which has attracted attention for many years. The question has never been satisfactorily settled, as it has only been possible to examine, in sufficiently large numbers, special classes of the community such as school children or young military recruits. In the recent Report of the Ministry of National Service on the Physical Examination of Men of Military Age, to several aspects of which attention has already been drawn in these columns,[1] the prevalence of hernia has not been overlooked, and new and valuable data have been obtained. It is unfortunate for our present purpose that the majority of the reports give only the percentage of men relegated to Grades III. and IV. on account of hernia and not its total incidence. In two reports, however, this is done. Dr. J. D. Comrie,[2] in a series of 10,000 recruits drawn from a mixed rural and urban population in Scotland between the ages of 18 and 41, found that 3·6 per cent. were the subjects of hernia. Of the 363 cases 12 only were rejected. He states that of the cases which had been operated upon one-sixth had recurrence. It is obvious, therefore, that 3·6 per cent. does not represent the true incidence at these ages, as the cured cases are not included. That the liability to hernia increases to the end of a man's working life is shown by Dr. Basil Cook in the report of the medical officer to the Local Government Board for 1908–09, where he states that the rate per million ruptured continues to increase till the age of 65. This is borne out by the regional report for Manchester and Stockport district, where of 2994 men aged from 43 to 51 12·5 per cent. were ruptured, and by a chart showing the percentage rejections for various age-groups in the London district. Of the economic effects of hernia we can judge from the statement that of 160,545 men in the London district 1·1 per cent. had such severe forms of hernia as to be placed in Grade IV.—that is, they were judged "totally and permanently unfit for any form of military service," even of a sedentary nature. In civil life the economic value of these men must be lowered. Dr. Cook also states, in the report cited above, that of 3162 adults seen in workhouses in 1907 1·9 per cent.

[1] THE LANCET, March 6th, p. 557; March 27th, p. 726; April 3rd, p. 780. See also THE LANCET, 1919, ii., 957.

attributed their pauperism to the incapacitating effects of hernia. The results of the modern operation for the cure of hernia are known to be excellent in early cases; thus in 1902 the army and navy invalided 15 per cent. and 25 per cent. respectively of their hernia cases, while in 1908, after extending the use of the operation, the rate fell to 4 per cent. in each case. It seems to us that an official inquiry might well gauge whether sufficient provision is made for operating on these cases, and whether the two causes which at present prevent men availing themselves of the existing accommodation can in any way be obviated. The causes are the length of the waiting lists at hospitals and the difficulty which a man with dependents has in giving up his work for the necessary time. The question of the provision of trusses of good patterns might also come within official purview. Many of those on the market are quite unsuitable, and the advertising quack who supplies an "appliance," with or without a substance to rub into the skin, robs the working man, in the aggregate, of many thousands of pounds a year under the pretext that he will not only retain but cure the rupture.

TO OUR READERS.

THE greatly increased and still increasing cost of paper—and, indeed, of everything connected with the making of a newspaper—has necessitated an advance in the price of THE LANCET. The rise in postage rates, also promising to go higher, is a factor working in the same direction in every newspaper office. The alternative to an advance in price—namely, a serious curtailment of the contents—would, in our opinion, abate too much of the usefulness of the journal to make it acceptable to our readers. We hope and believe that they will agree with us that at no time has it been more necessary for the profession to interchange freely their knowledge and their experiences, and to learn as fully as possible what their social and professional relations will be in the approaching period of reconstruction. We believe that we best interpret the wishes of the readers of THE LANCET by not attempting to reduce the present size of the journal, and it has accordingly been decided, with the issue of May 22nd, to increase the charge for the weekly issues of THE LANCET from 10*d.* to 1*s.*, the inland subscription from 36*s.* to 42*s.*, and the foreign subscription from 40*s.* to 50*s.*; for the impossibility of getting thin paper for the foreign copies leads to an increased rate of postage on the copies sent abroad. These changes will not take place during the currency of present subscriptions, but will operate on their renewal. We have not made the increases without ascertaining their necessity, and we shall be delighted when circumstances permit us to return to the former prices.

THE Croonian lecture of the Royal Society on Genetic Segregation will be delivered by Professor W. Bateson at the meeting on June 17th.

WE commend to our readers a short notice, which appears in another column (p. 1085), of the existing position of the Auxiliary Royal Army Medical Corps Fund. Over £4500 were distributed last year in reply to great needs. But the needs remain, and subscriptions are urgently required to meet a great debt of honour.

A NATIONAL COLLECTION OF TYPE CULTURES.

THE Medical Research Council has long had in view the formation of a National Collection of Type Cultures, from which biologists in general and bacteriologists in particular may obtain, through a trustworthy source, authentic strains of recognised bacteria and protozoa for use in scientific work. The need of an available supply of this kind has long been felt in many directions and particularly in medical research work, for the study of principles and methods in bacteriological technique and for the systematic classification of bacteria and protozoa in the various species and strains.

Previous Provision of Facilities.

In the past the needs of workers in this respect have never been fully met. In this country the Lister Institute of Preventive Medicine has for many years assisted bacteriologists both at home and abroad, so far as the resources of its own private collection have permitted, but British workers have been dependent in great part upon the courtesy of scientific colleagues or upon the collections of institutes in other countries. Before the war the collection at the Pasteur Institute in Paris, maintained by M. Binot, was very helpful to workers here. A collection of type cultures was formerly maintained on a commercial basis by Král at Prague, and this was subsequently transferred to the Sero-physiological Institute of Vienna. This source of supply was never completely satisfactory, though many made use of it. In America the Museum of Natural History in New York has maintained a Culture Bureau during the last eight years, and it is believed that the activities of the Bureau have been of the greatest benefit to workers there, not only by the provision of authentic cultures, but also by the studies in classification made by its staff. Early in the present year the Medical Research Council was able, by the courtesy of the governing body of the Lister Institute, to make arrangements to maintain a National Collection of Type Cultures at the Institute, where all the necessary facilities have been provided. The scheme will be under the general direction, on behalf of the Council, of Dr. J. C. G. Ledingham, a member of the staff of the Lister Institute, while Dr. R. St. John Brooks and Miss M. Rhodes have been appointed by the Council to be curator and assistant curator respectively. The Medical Research Council acknowledges its indebtedness to the governing body of the Lister Institute for this opportunity of establishing a central collection upon a proper footing at once, without further delay. The present arrangement is made for a short term of years, before the end of which the future location of the collection will be considered.

Aims and Objects of the Collection.

It is proposed to collect and maintain bacterial and protozoal strains of medical, veterinary, and economic importance, but in the immediate future the efforts of the staff will be directed more particularly to obtaining fully authenticated strains of pathogenic organisms. Subsidiary researches on the viability of bacteria in artificial media will be undertaken with a view to the discovery of economical and labour-saving methods of subculture. The staff will also be prepared to give help in the identification and classification of strains received from workers at home or abroad.

The coöperation of bacteriologists is earnestly invited, and in return every effort will be made to supply the needs of applicants for cultures. Cultures that may be sent either for identification or for maintenance in the collection should be accompanied by the fullest particulars as to source and date of isolation and, if possible, by clinical and epidemiological notes. It must naturally be left to the discretion of the director to decide whether given cultures are of sufficient importance to be maintained in the collection, but it is hoped that this will not deter workers from forwarding strains of even the commonest types of organism. These

will have value at least for the adequate representation of strains of recent origin. Studies in classification will also be aided if large series of authentic specimens of different but closely similar or cognate species are available for workers.

Cultures will be supplied on demand so far as possible to workers at home or abroad, and, as a rule, a small charge will be made to defray the cost of media and postage. Strains representing at least the commoner types of human infection can already be supplied, and at a later date it is proposed to prepare a catalogue for publication.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Scottish Board of Health Memoranda.

Malaria.—A memorandum issued to each local authority deals with indigenous cases of malaria occurring in Scotland. It is pointed out that there are in Scotland a large number of men who contracted malaria while on service, and the presence of individuals having the parasite in their blood cannot be overlooked. The anopheline mosquito is found in Scotland in many localities, though its activities are limited by the climatic conditions, excepting between the months of May and September. The tertian form of the disease is that most likely to be seen, and diagnosis should be easy from the typical clinical picture it presents. It should be kept in mind that children are highly susceptible to malaria, particularly those who are ill-nourished. Arrangements have been made whereby specimens of blood from suspected cases can be examined at the laboratory of the Royal College of Physicians. Malaria has recently been made notifiable in order that medical officers of health may make investigation into possible sources of infection. In an appendix mention is made of all districts in which the anopheles has been recorded to occur.

Treatment of Tuberculosis.—The Scottish Board of Health in a circular state that the village settlement idea, to which they attach great importance, is related on the one hand to the sanatorium and training colony, and on the other to the re-introduction of ex-sanatorium and training colony patients into employment. In such settlements ex-Service men would be given the opportunity of permanent employment, with housing accommodation for themselves and their families. The committee consider that such men would be more willing to enter sanatoriums and to remain there for a sufficient period if they knew that in so doing they had a definite prospect of continued treatment and training and later on care in permanent settlements. The committee believe that where schemes of "colony" training are put forward under suitable conditions, are sympathetically managed, and hold out a prospect of permanent settlement, ex-Service men will be willing to avail themselves of the opportunities offered. Such settlements should be in close connexion with existing sanatoriums and training colonies. The committee suggest the provision throughout the country of ten such settlements with accommodation in each for from 200 to 250 men and their families, and on this basis there might be one or two of these settlements in Scotland. They recommend that the Government should provide a sum of £1,000,000 to finance a number of village settlements for ex-Service men, which might be provided either by local authorities or by voluntary bodies. They further recommend that where these settlements were provided by local authorities the Government should meet the capital cost outright, but that after, say, five years the scheme would more properly form part of the local provision for the treatment of tuberculosis, and that then local authorities should repay an agreed proportion (not less than one-fifth) of the capital expenditure. The present purpose of the Board is to bring to the notice of the more important local authorities the possible establishment of village settlements, and to intimate that at an early date a conference for discussion of possible action will be held.

Small-pox in Scotland.

The continued extension of small-pox in Scotland is viewed with anxiety by the public authorities. The disease first made its appearance in Glasgow in the month of March, and since then there has been a progressive increase in the number of cases, as well as an extension of the outbreak to other districts. The origin of the present epidemic has been traced to two sources—one a ship from India and the other a ship from Egypt. In a considerable number of cases there has, however, been failure to discover the source of infection. The number of unvaccinated persons has very greatly increased of recent years, and the position is one which is favourable for the further extension of the outbreak. The type of small-pox is severe. The Scottish Board of Health has issued a circular to local authorities in which it is urged that for the present all cases of "chicken-pox" should be made notifiable, and that the necessity for immediate medical advice in any case of doubtful illness should be urged upon the public. In Glasgow it has been pointed out that the outbreak has been largely confined to unvaccinated children and to unrevaccinated adults. Of 11 deaths, 9 were in unvaccinated individuals, of whom 7 were children; no death has occurred among vaccinated children. During the fortnight ending April 17th there were 12 cases of small-pox in Scotland; for the next fortnight there were 21 cases; while for the current period ending May 15th, there have been up to date (9th) no fewer than 42 notifications. Glasgow still remains the headquarters of the disease, but cases have occurred in Edinburgh, Falkirk, and elsewhere. Every possible measure for control of the epidemic is being adopted, and the need for recent vaccination is being widely brought to public notice. The Glasgow figures to date show a mortality of 29 per cent. among the unvaccinated, and of 5 per cent. among the vaccinated.

Influenza in St. Kilda.

The isolated population of St. Kilda is at present suffering severely from influenza, and the numerous reports in the daily press have not exaggerated the proportional incidence, but have not always indicated the size of the population affected. The inhabitants number about 80, of whom at least 60 have been affected. Communication with the mainland has been very difficult since the termination of the war and the withdrawal of the wireless station and of naval patrols. News of the outbreak and of shortage of medical stores was brought to Fleetwood by a trawler. There is no medical man on the island, and care of the sick is in the hands of the district nurse and the parish minister. Immediately on receipt of the news the Board of Health dispatched one of their medical officers and a supply of stores to the island. The St. Kildans, owing to their isolated position, are said to be particularly susceptible to the ravages of epidemic diseases.

Proposed Acquisition of Oldmill Poorhouse by Ministry of Pensions.

The Ministry of Pensions propose to acquire 200 beds at Oldmill Poorhouse, Aberdeen, as a hospital for disabled ex-Service men. This poorhouse formed the 1st Scottish General Hospital during the war. For repairs necessary to the poorhouse as a result of its occupancy by the military authorities during the war the parish council claimed the sum of £18,000. As this sum is still outstanding, and as the repairs have not yet been completed, it is unlikely that the parish council will entertain the request of the military authorities until an amicable settlement as to the expenses incurred in repairing the premises has been arrived at.

Aberdeen Sick Children's Hospital.

Sir James Taggart, ex-Lord Provost of Aberdeen, has written to the local papers suggesting a plan to raise funds for the building of a new Sick Children's Hospital at Aberdeen. His suggestion is that all the workmen in the city and the surrounding district should work one Saturday afternoon in their various factories and workshops, and hand over the wages earned in that after-

noon to the hospital fund, the employers also contributing their share in the scheme. Sir James Taggart calculates that, taking the number of the workers in Aberdeen to be 63,645, four hours' work at an average of 1s. per hour would realise the sum of £12,729. To this would be added the employers' contributions and the sum received from the surrounding districts. The appeal has received a mixed reception. Several employers have expressed hearty approval of the scheme, but the general feeling would appear to be that the scheme is impracticable.

University of St. Andrews.

At a meeting of the University Court of St. Andrews held on May 1st the following appointments to lectureships were made: lectureship in regional anatomy (Dundee), Dr. John Taylor; lectureship in diseases of children, Professor Ll. T. Price.

The first meeting of the General Nursing Council for Scotland was opened on May 10th, at the Scottish Board of Health, Edinburgh, by Sir Leslie Mackenzie. Captain C. B. Balfour, of Newton Don, and Miss Norah Milne, B.Sc., were appointed chairman and vice-chairman of the Council, with Mr. C. L. Farmer, of the Board of Health, interim secretary.

May 10th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Eight Hours' Day for Hospital Staffs.

No one has doubted the difficulties accompanying the application of the eight-hour day law to hospital staffs in Paris. Before adopting the Order a careful study of the question was made by committees composed of members of the municipal council, administrative officers of the Assistance Publique, and representatives of the various unions concerned. It is obvious that the new law has resulted in a considerable increase of expenses, which cannot be accurately estimated at present, and, indeed, will not really be appreciated for a year. The arrangements adopted consist of the division of the personnel into three groups—a morning shift, an afternoon shift, and a night shift. The first two groups work respectively for 9½ hours, with an interval of 1½ hours for meals, to be taken at will outside the hospital (no rebate being allowed) or within its walls. The night shift works for eight consecutive hours, and its members are provided with breakfast before leaving hospital if desired. Since trade-unions in general have promised that shorter hours will be compensated for by more concentrated work, it has been arranged that hours of work shall be counted, not from the time that the employee enters the establishment to the time he leaves it, but from the moment of his appearance dressed for duty till that at which he leaves his post. Moreover, holidays, which have been fairly easily obtained till now, will only be granted under exceptional conditions. Too frequent sick leave will lead to dismissal. The services of employees whose work can be replaced by an extended use of the telephone, telegraph, or postal departments will be dispensed with. The attendant will have to remain actually in the wards, and will not be allowed to attend courses and lectures in the hospital during his duty hours. The three shifts will not have the same numerical composition. The morning shift, which will arrive before the visiting staff, take temperatures, attend the round, take down the prescriptions, and assist at operations, will be the most numerous. The times of arrival of attendants are scheduled from 6 in the morning to 8.30, at half-hourly intervals, the first comers leaving earlier, and the last comers leaving at 6 in the evening. Similarly the dinner hour is fixed at three successive hours, so that all the attendants in a ward will not be absent at the same time. The afternoon shift succeeds the morning shift in the same way, at half-hourly intervals, and with variable meal times. The night shift, the least numerous of the three, takes over at 10 and 11 at night, and leaves at 6 and 7 in the morning. When its members leave in the morning they indicate to the day shift all necessary information and directions as to continuation of treatment. M. Mesurier has devised a special case paper, divided into three parts, on which each shift writes notes which can be consulted at any moment by the Chief.

The principal difficulty resolves itself into the question of the meal times of the afternoon shift. Because of the variable hour, always late, at which the mid-day meal is taken, its duration has had to be limited to half an hour, as compared with an hour and a half in the case of the morning shift. M. Mesurier recommends that this shift should be recruited from attendants living in; if any externs have to be employed they should take their meals in the hospital refectory during a half hour between 1.30 and 2.30. For the general employees of the hospital not working in the wards an eight hours day has been much easier to organise, with four hours in the morning, four in the afternoon, and an interval of one and a half to two hours for dinner. In all, the personnel of the hospital has had to be increased, not by 33 per cent., as had been calculated, but by 20 to 22 per cent.

Athletic Sports at the Military Hospital.

An interesting innovation has just been established in Paris at the Hôpital Villemin. The medical officer in charge has for 10 years specialised in the differentiation of human constitutions and temperaments on an anatomical basis, and has undertaken to prove the results of his studies by practical demonstrations. Convinced that the perfect human type is that developed by Olympic exercises and by running, he has obtained the permission of the military authorities to convert into training grounds the lawns of the old hospital. Not only convalescents will be drilled there, but also soldiers from the neighbouring barracks if desired. Already the school of physical re-education at Joinville has collected together all the soldiers in bad general condition, but with no disabilities justifying their exemption from military service. All the medical officers in charge of troops have been asked to hunt out puny recruits and to send them to this school, where three months of physical culture in the fresh air are expected to transform them into strong soldiers in excellent condition for the army. The military medical service in France is thus entering a path which should lead to real progress.

May 10th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Post-graduate Lectures and Clinical Courses at the University of Vienna.

THE time-table for the summer term of the Medical Faculty of the University of Vienna has just been published. It contains the announcement of 448 different classes, which will be held by 21 ordinary, 113 extraordinary professors, and 152 private teachers and clinical assistants. As the chairs of obstetrics and gynæcology, as well as experimental pharmacology and pathological anatomy, are still vacant, these subjects will be taught by the chief clinical assistants. The fees payable are for the first time in some accordance with the general rise of prices, and the students have in vain tried to induce the Government to stick to the low fees hitherto paid for clinical teaching. A student, whose lecture fees for his sixth half year used to be about 60–100 kronen, now has to pay at least 500–700 kronen, special courses not included. Post-graduate courses are still more expensive, costing now about 1000 kronen for each course. This increase of fees would not be of great moment to English or American students, however, for even 1000 kronen is at the present rate of exchange about equivalent to $5 or 25s. There will be 8 classes in physiology, 35 on pathological anatomy, 81 on general pathology, 22 on rhino-laryngology, 29 on otology, 46 on surgery, 41 on dermatology and syphilis, and 12 on

radiology, besides numerous others on subjects of less general importance.

Increase in Number of Medical Students.

The winter session lasted from October, 1919, till March, 1920, and the figures are now available for comparison and comment. There were registered 4282 ordinary students of medicine (against 3697 the term before), amongst them 578 women. Besides these there were 221 extraordinary students, mostly foreigners, of whom 32 were women. The increase in the number of students is well marked since 1915, and the output of graduated doctors is growing so rapidly as to constitute a real problem. Already there are over 4000 practising doctors in Vienna, against 3100 in 1914, whilst the population of the capital of our mutilated country has gone down from 2,250,000 in 1914 to 1,860,000 on Dec. 31st, 1919.

Investigations on the Caloric Needs of Large Numbers.

In a paper read by Professor Durig before the Medical Society of Vienna quite recently, the results of exhaustive investigations conducted by him and his staff into the conditions prevailing among the population of Austria have been given, and serve to elucidate several problems of nutrition. First of all, it appears quite clear that the old teaching of Voit is correct, that 3000 calories are necessary for the human body to maintain its metabolism equilibrium. This was believed to be too high a figure at the beginning of the war. But it was soon proved that Voit's teaching cannot be ignored. Not every person requires 3000 calories—only men of 70 kilos. weight doing moderate labour. If large numbers are to be cared for one must calculate with provision-units or food-units. Thus, for example, 100 females are equal to 80 units, and 100 16-year-old adolescents are equal to 65 units. The figures of the last Census of 1910 show that in pre-war times 100 persons of the population of Old Austria required 77 units of provision or food, and this amounts to 2200 calories. This figure coincides very closely with the 2300 calories postulated by Professor Rubner as the average requirement in his famous researches on German people during the first months of the blockade of his country. At present our population has changed so much that the proportion of males to females is 100 : 120; previously it was 100 : 103. There are now fewer children and old-aged people. The average body weight, which stood in 1913 at 46 kilos., is now 41 kilos. The hours of work are less; formerly 9–10 per day—now hardly 8 hours, and the intensity of work has decreased. Therefore the caloric requirements have gone down at least 10 per cent. And as there is hardly any matter wasted in our foodstuffs now—everything is being utilised by our hungry people—the caloric requirement is at present about 1700, which must be provided for if catastrophe is to be avoided. Rationing of food has serious drawbacks, as the uniform ratio of the caloric value guaranteed to each citizen by the present method of food distribution is insufficient even for a widow with young children, without mentioning a hard-working labourer, who may need over 4000 calories a day. Professor Durig earnestly recommends improved methods of agriculture as the only means to obtain adequate quantities of food in our country without resorting to the ruinous import of cereals from abroad.

Health Statistics for the First Quarter of 1920 and Before.

The chief medical officer of health for Vienna has recently made public a few statistical items which are not without interest. In the first weeks of the year the mortality was about 740 cases per week; in the second week of February it rose to 1030, owing chiefly to influenza and heart disease, and continued to rise to 1045 and 1106. Whilst tuberculosis has claimed nearly the same number of victims every week, the figures vary between 157 and 163 per week. Nearly as many have fallen victims to influenza after a temporary drop in January. On an average the mortality corresponds to the general conditions of nutrition and work prevailing in this city. Graver affections of the heart and the circulatory system often prove fatal because of diminished resistance of the body. Death due to heart disease is becoming more frequent. Measles and scarlet fever have been rather virulent; over 40 deaths per week were caused by these diseases. The average daily number of deaths was 125. In the years 1911 to 1916 the total number of deaths ranged between 33,500 and 37,600; this number rose in 1917 to 76,131, and in 1918 to 51,497, but dropped in 1919 to 49,932. Although the population also diminished in 1919—it is now 20 per cent. less than in 1914—the death-rate has not kept pace with it. The birth-rate in the years 1911 to 1914 was between 36,000 and 38,000. In 1915 it fell to 29,575, and the next year it was 23,491. In 1917 it dropped to 20,688, in 1918 to 19,287, whilst 1919 showed an increase to 24,128.

April 22nd.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Medical Education.

SOME time ago the Melbourne University left the insistence on Latin and geometry as compulsory subjects for matriculation, before entering on a medical course, to the discretion of the Medical Faculty in individual cases. At the last meeting of the Council it was decided to abolish them as compulsory subjects altogether. This was opposed by Sir Harry Allen, the Dean of the Medical Faculty, who said the general education of students in English was very poor, especially in spelling. The change has been made largely by the advocacy of the heads of public and private schools. Two medical members of Council voted with the majority.

The Dispute with Lodges in Victoria.

At the suggestion of the Premier of Victoria a conference was arranged between the Victorian Branch of the British Medical Association and the Friendly Societies' delegates to try to find some middle way in respect of points which still separate the two parties to a dispute which has remained unsettled for two years. After Judge Wasley had, as arbitrator, awarded practically the terms the B.M.A. were asking nothing further was done, because the B.M.A. insisted on medical institutes which had been started since the dispute began being closed. To this the Friendly Societies would not agree, and a deadlock ensued which the societies tried to overcome by sending a representative to England to engage new medical officers for further institutes. This course is only approved by some of the extremists, and the conference took place, with the result that three of the large Orders have agreed to accept the following terms as a basis if approved by their annual meetings, to be held in March. It is possible that a satisfactory arrangement will be reached, though the M.U.I.O.O.F. and a considerable section of the A.N.A., two of the largest Orders, are opposed to any compromise. The provisions are:—

1. Acceptance and recognition of the terms of the Wasley award.
2. The exercise of freedom of choice to members of the Friendly Societies selecting their doctors.
3. No victimisation or undue influence to be exercised by either parties to the present dispute.
4. No interference with the staffs or conduct of present established institutes.
5. An undertaking by the Friendly Societies that the respective governing bodies will submit to their annual conferences (with a strong recommendation for adoption) a rule prohibiting any branch or body of members taking part in the establishment of a new institute for four years.
6. The governing bodies of the various Orders will obtain control of all medical arrangements of individual lodges. (The Australian Natives' Association and the Independent Order of Rechabites have taken the necessary steps and secured control. The United Ancient Order of Druids will submit alteration of rules at next annual meeting.)
7. That all arrangements with medical officers shall be made with these governing bodies.
8. Machinery will be devised to enable the societies to carry out their promise of free choice of doctors.
9. There be appointed a committee representing the Victorian branch of the British Medical Association and the Order or Orders for the purpose of carrying out the terms of the agreement, and to interpret the meaning of any clause or condition contained therein.

Tasmanian Health Legislation.

A new Hospitals Act came into force last year; it provides, inter alia, for the inspection of hospitals by the Chief Health Officer and the control of persons suffering from infectious disease. The notification of venereal disease does not appear to be a very satisfactory measure. For the year 254 males and 53 females were reported suffering from gonorrhœa and 36 and 17 respectively from syphilis. It is obvious that these figures must be inaccurate and that female cases especially are not being returned.

Death of Sir T. Anderson Stuart.

The death is announced of Sir Thomas Anderson Stuart, M.D., who came to Sydney some thirty years ago to found the Medical School in the Sydney University. His work has been crowned with the most gratifying success and his many students have always had an affection and esteem for their Dean, who was also Professor of Physiology, which continued to his death. The late Professor Stuart was a man of marked personality and made his influence felt outside University affairs. Some time ago an illness began to manifest itself which in its progress revealed its malignant character. Notwithstanding this knowledge and the fact that there was considerable personal suffering Professor Stuart quietly continued at his work, and at the time of his death was arranging matters for the annual opening of the school. He was 63 years of age and was a well-known graduate of Edinburgh University. Expressions of regret have been universal throughout Australia.

March 15th.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Temp. Surg. Lieut. J. T. Wood (D.), R.N.V.R., transferred to pernanent list of Surgeon Lieutenants (D.).

Surg. Rear-Admiral Sir P. B. Handyside placed on retired list.

ARMY MEDICAL SERVICE.

Col. J. D. Ferguson is placed on half pay.

Temp. Col. Sir A. W. Mayo-Robson (Major, R.A.M.C., T.F.) relinquishes his temporary commission on re-posting.

ROYAL ARMY MEDICAL CORPS.

Temp. Capt. W. E. R. Dimond and C. L. Spackman relinquish the acting rank of Major.

Officers relinquishing their commissions:—Temp. Major C. L. Williams (retains the rank of Major). Temp. Capt. (acting Major) M. Fitzmaurice-Kelly (granted the rank of Major). Temporary Captains retaining the rank of Captain: R. Lawrence, J. Wylie, L. O. Weinman, D. Miller, M. D'Albon, W. L. G. Davies, J. McGarrity.

SPECIAL RESERVE OF OFFICERS.

Capts. R. P. Starkie and J. Purdie relinquish the acting rank of Major.

Capt. J. Lanigan relinquishes his commission and retains the rank of Captain.

TERRITORIAL FORCE.

Major C. J. Martin to be acting Lieutenant-Colonel whilst specially employed.

Officers relinquishing their commissions:—Capts. C. E. H. Milner, G. B. Buchanan, A. Cambell (granted the rank of Major), and T. W. H. Downes (retains the rank of Captain).

ROYAL AIR FORCE.

Squadron Leader A. Grant is granted a permanent commission as Squadron Leader.

Capt. A. W. P. Pirie and Lieut. E. L. Sergeant are transferred to the unemployed list.

Capt. (acting Major) A. A. Atkinson (R.A.M.C., S.R.) relinquishes his commission on account of ill-health caused by wounds, and is permitted to retain the rank of Major.

Capt. C. P. V. MacCormack relinquishes his commission on account of ill-health caused by wounds, and is permitted to retain his rank.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon the undermentioned officers: Lieut.-Col. A. G. Hamilton (attached Welsh Border Mounted Brigade, Field Ambulance), Majors D. C. L. Orton (attached Welsh Mounted Brigade, Field Ambulance), V. Graham (attached 5th Battalion, Yorkshire Light Infantry), G. P. Chappel (attached 7th Battalion, Middlesex Regiment).

INDIAN MEDICAL SERVICE.

Major R. H. Bott to be temporary Lieutenant-Colonel.

Col. H. Fooks is retired.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUND.

The annual meeting of this fund was held at 11, Chandos-street, Cavendish-square, W., on April 30th, with General Sir John Goodwin in the chair. Since the last annual meeting £1974 have been granted to help the maintenance of the orphans of 31 officers in the Auxiliary Royal Army Medical Corps who lost their lives as a result of the war; and £2620 have been granted in the same way to the orphans of 83 of the rank and file, making a total of £4594 granted and 114 cases relieved in a single year. As frequently several children of a single case were relieved, it will be seen that the total number of persons relieved was considerable. The major part of the income of the fund is derived from subscriptions, and the committee earnestly hope that these will continue to be sent to the honorary secretary, Sir William Hale White, at the above address.

URBAN VITAL STATISTICS.

(Week ended May 8th, 1920.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 18 million persons, the annual rate of mortality, which had declined from 18·7 to 14·2 in the six preceding weeks, further fell to 13·8 per 1000. In London, with a population of nearly 4½ million persons, the annual death-rate was 13·0, or 0·7 per 1000 below that recorded in the previous week, while among the remaining towns the rates ranged from 4·3 in Eastbourne, 5·6 in Southend-on-Sea, and 6·1 in Hornsey, to 21·3 in Sunderland, 23·2 in Stockton-on-Tees, and 26·3 in West Hartlepool. The principal epidemic diseases caused 373 deaths, which corresponded to an annual rate of 1·1 per 1000, and comprised 139 from measles, 78 from infantile diarrhœa, 67 each from whooping-cough and diphtheria, 18 from scarlet fever, and 4 from enteric fever. Measles caused a death-rate of 1·6 in St. Helens, 1·7 in Acton and in Lincoln, 2·1 in Rhondda, and 2·2 in Norwich. The deaths from influenza, which had declined from 392 to 202 in the six preceding weeks, were 201, and included 31 in London, 26 in Sheffield, 12 in Bolton, 11 in Newcastle-on-Tyne, and 10 in Huddersfield. There were 1947 cases of diphtheria, 1794 of scarlet fever, and 11 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 1951, 1831, and 12 respectively at the end of the previous week. The causes of 43 of the 4703 deaths in the 96 towns were uncertified, of which 11 were registered in Birmingham, 4 in Liverpool, and 3 each in London and Southport.

Scotch Towns.—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 18·9, 19·2, and 18·3 in the three preceding weeks, slightly rose to 18·4 per 1000. The 428 deaths in Glasgow corresponded to an annual rate of 20·1 per 1000, and included 22 from influenza, 18 from measles, 5 from diphtheria, 4 from whooping-cough, 2 from infantile diarrhœa, and 1 from small-pox. The 104 deaths in Edinburgh were equal to a rate of 15·9 per 1000, and included 3 each from measles and infantile diarrhœa.

Irish Towns.—The 182 deaths in Dublin corresponded to an annual rate of 22·9, or 4·1 per 1000 below that recorded in the previous week, and included 14 from whooping-cough, 9 from infantile diarrhœa, 4 from measles, 3 from influenza, and 1 from diphtheria. The 168 deaths in Belfast were equal to a rate of 21·2 per 1000, and included 9 from influenza, 4 from infantile diarrhœa, 2 each from scarlet fever and whooping-cough, and 1 each from enteric fever and diphtheria.

ON May 8th a number of matrons and nurses, headed by Miss Mildred Heather-Bigg, R.R.C., presented to Mrs. Bedford Fenwick an address of thanks for her work for the organisation and higher education of nurses.

MEDICAL MEN AND FRIENDLY SOCIETIES.—At the recent annual conference of members of the Rechabite Society, held at Exeter, it was reported that it would be necessary to raise a "big levy" to meet the medical charges. One member stated that many doctors were out to smash the juvenile branches of the Friendly Societies; another remarked that he did not believe this, but that the medical men wanted full value for their services.

Correspondence.

"Audi alteram partem."

THE HIGHER FUNGI IN RELATION TO HUMAN PATHOLOGY.

To the Editor of THE LANCET.

SIR,—In studying the series of Milroy lectures, by Dr. A. Castellani, in recent numbers of THE LANCET, I have been struck by the classification of the fungi which is therein adopted. The recognition of the sugar reactions as the sole means of separating or identifying such organisms as the yeasts, which are otherwise morphologically identical, appears to me unjustifiable at the present moment. The fermentation of the commoner carbohydrates employed in laboratories, such as glucose, mannite, maltose, saccharose, and lactose, forms an extremely unstable foundation upon which to base any classification of bacilli, or yeast-like organisms; they are regarded by most bacteriologists in the nature solely of confirmatory tests.

It is a matter of common knowledge that such a well-known organism as *B. paratyphosus* A varies considerably in its powers of fermentation of glucose, some strains producing acid only, while others produce acid as well as gas. The confusion which has arisen out of attempts to classify organisms of the Flexner group in this manner has been a source of considerable anxiety to those who are attempting to simplify the problem of bacillary dysentery. But confusion becomes worse confounded when dealing with gas-forming organisms of the *B. coli* group, which are extremely unreliable in this respect and whose reactions do not remain constant after long subculture, call them *asiaticus*, *pseudo-asiaticus*, *pseudocoli*, or what you like. The same rule holds good, only more forcibly so, when one attempts to classify yeasts belonging to the genus *Monilia* in this manner. I can claim with some justification that this cannot be done, and should one conscientiously apply every test and not endeavour to create new species one will find that the carbohydrate reactions of these organisms vary from day to day, depending upon the length of incubation, length of subculture, and so on.

Considering these facts it must be conceded that Dr. Castellani has been particularly fortunate in being able to identify and name such a number of species upon such slender evidence, for one must remember that no two authors are yet agreed upon the proper reactions which such a common yeast as the thrush fungus, *Monilia albicans*, should give. In my work upon sprue in Ceylon in 1912 and 1913 [1] I isolated 106 strains of yeasts, mostly from cases of sprue, and had I then had the scientific temerity, which I fortunately had not, or been able to employ a big enough series of sugars, I would no doubt have been able to name 106 new species.

It seems to me, Sir, that what is wanted at present is an attempt to simplify, not to complicate or confuse, the nomenclature of tropical medicine; the essence of science is simplicity, not complexity. The needless multiplication of names and species is most galling and perplexing to the sincere student. By these means we are descending into a veritable terminological morass, and are departing as far from Koch's postulates as it is possible to get. The cry of the student of tropical medicine is for facts, not names, and the practical application of these facts to the cure of disease.

After a due consideration of the views set forth above if we attempt to apply the reactions of these yeasts to the identification of different sugars in the urine, it appears that the inferences drawn are unwarrantable. There is only one sugar which it is important to detect in the urine, and that is glucose; and, further, the usual tests suffice; but even were the yeast test as described so accurate as to be specific, has it any practical application, and, if so, are we to understand that the tropical practitioner of the future is to carry round with him cultures of *Monilia balcanica*, *M. krusei*, and *M. tropicalis* with which to inoculate catheter specimens of urine in sterilised tubes in his improvised laboratory; and what is he to do now that the former strain has been destroyed by fire?

Finally, on the supposition that the classification and recognition of these so-called pathogenic fungi is in such an indefinite state, is it not a little premature to describe so many new diseases of the intestine, respiratory tract, cerebrum, genito-urinary system, and skin as being due to their agency? One would imagine that much investigation is required on this subject before finally accepting their existence as definite clinical entities in man.

I am, Sir, yours faithfully,

PHILIP MANSON-BAHR.

Weymouth-street, W., May 5th, 1920.

[1] Report on Researches on Sprue in Ceylon, pp. 143-145.

THE SURGICAL TREATMENT OF UTERINE AND VAGINAL PROLAPSE.

To the Editor of THE LANCET.

SIR,—Dr. W. Blair Bell, in his lecture on the above subject, which appears in your issue for May 8th, pays no attention to the musculature occluding the pelvic outlet; and in his surgical treatment limits himself for the most part to visceral structures, as though this musculature did not exist and is not concerned with the genesis of prolapse. This idea is supported by his reference to the prophylaxis of prolapse—a condition "almost invariably a sequel of parturition"—for the only predisposing condition he mentions is a puerperal retroflexion of the womb. Thus, we may suppose (1) that the babe passes by the musculature referred to, without affecting it, or that the muscular injury is immaterial (perineorrhaphy sufficing to deal with it); (2) that prolapse is not a hernia; and (3) that if Gilliam's operation were performed as a routine in the puerperal state, prolapse would (almost invariably) be prevented. The untenableness of this position is, I think, shown by the interval of time which usually elapses between the last parturition and the occurrence of prolapse. Cases do occur soon after labour (within a few weeks), but in the majority the interval is usually many years. Dr. Blair Bell does not indicate the percentage of these early or acute cases in his series, and I wish he had; nor does he say whether any particular procedure is necessary for their cure. This is unfortunate, for they are important from the point of view of testing operative procedures. Moreover, the occurrence of "congenital prolapse" shows that the influence of pregnancy and labour is unnecessary. Dr. Blair Bell objects to this term being applied to that prolapse which occurs within the first few days of life, and thinks it should be limited to the appearance of the cervix at the vulva (or beyond) in the young virgin adolescent, cases of elongation of the portio being excluded. Against this view we have "congenital prolapse" occurring, not only in the young adolescent, but in older virgins. Further, he does not show reason why this condition should be considered congenital, merely stating it "is no doubt due to inherent defects of the pelvic floor." But this pelvic floor is for him apparently a visceral structure, and in line with this the only way he has been able to treat these cases—the despair of surgeons—with success is by his extensive visceral procedure.

Unfortunately, Dr. Blair Bell, in his lecture, was unable to deal with the genesis of prolapse—the whole of prolapse cannot be treated in one lecture. But unless we have clear ideas of the genesis of a disease, its treatment is bound to be empirical. That confusion obtains and the surgical treatment of prolapse is empirical is shown by the lecturer's references to the opinion and practice of other surgeons; and largely explains his statement that "many cases can be cured by almost any method." Nor do I think Dr. Blair Bell's position impregnable. For if retroflexion or retroversion predisposes to prolapse, how is it these conditions are so often found without prolapse, and without the signs and symptoms of impending prolapse? How can prolapse of the vagina occur without depres-

sion of the superjacent organs? Yet we read that primary prolapse of the vagina occurs, whilst the uterus retains its normal position! How, if prolapse of the vagina causes elongation of the supravaginal cervix, is the body of the uterus retained in the pelvis? And how, in cases in which no vaginal prolapse precedes the elongation (e.g., in "congenital prolapse"), is the elongation of the supravaginal cervix caused? Is it simply from traction of the cervix? All these difficult questions are resolved by the recognition that prolapse is a hernia, that parts of the viscera are expressed from some cavity, through some aperture or ring in a limiting wall of that cavity, by a force or series of forces arising within the cavity. From this we see at once that the compression or constriction exerted by the hernial ring upon the mass extruded at the region of the ring is not only the cause of the retention within the cavity (pelvis) of viscera, partly extruded (e.g., body of uterus), but is also the cause of the visceral elongation in the region of the ring. Dr. Blair Bell, however, paints no such picture; yet his concerted visceral procedures cure prolapse—and in 99 per cent. of cases! How is this to be explained? Perhaps it is partly explained by the persistence of the limiting wall or floor in his cases—the unobtrusive musculature—and by the changes which may occur in it with the rest in bed, &c. The statement that many cases get well whatever the operative treatment rather points to some unseen agent at work. Yet cases remain in which this can be excluded; cases, for instance, which after operation by one surgeon and without an intervening parturition have soon relapsed, but have been followed by success with a more extended and complete visceral procedure. And one readily admits that such visceral procedures do much, perhaps untold, good. But how do they act?

If, on the examination table, after replacing a prolapsed mass, one could, by a wave of the hand, convert the easily deformable tissues into a rigid mass, no return of the prolapse, even on the greatest bearing-down, could occur. On the other hand, even in the normal, if the pelvic visceral tissues possessed the physical properties of discrete grains of sand, retention during activity would be impossible. The plastic operations on the viscera have the effect of increasing the viscosity of the visceral parts concerned, which serves itself to prevent their extrusion—rather participates in doing so. How else do colporrhaphies and the other operations mentioned, and especially the interposition operation, act? To suppose they act by restoring visceral ligaments which have been stretched by the prolapse, is absurd. We cannot believe that colporrhaphies affect the ligaments. That colporrhaphies do not suffice in all cases Dr. Blair Bell has shown. Nor can we believe that Gilliam's operation suspends the uterus. Dr. Blair Bell depicts a uterus greatly elongated after ventrifixation done for prolapse. If the uterus will stretch after its fundus has been fixed to the abdominal wall, we cannot believe that if Gilliam's operation had been done in a similar case that the uterus would have remained in its normal position. But in such a case Dr. Blair Bell does not merely perform Gilliam's operation, he operates on the utero-sacral ligaments and now occludes Douglas's pouch. But we cannot believe that this "reconstruction" of the utero-sacral ligament cures the prolapse; for even if it maintained the cervix behind, it would not cure the cystocele. For this the perineum must still be repaired and a colporrhaphy done. Surely these concerted procedures increase the viscosity (or diminish the deformability) of the visceral mass in the pelvis, and give a chance to the musculature beneath to carry on. These operations are performed before the menopause, when the patient is in fairly good health, before the decline which later sets in. Since in many of these patients the prolapse only appeared some time, often many years, after the last child was born, it is plain the musculature, which had been able to carry on, can do so again.

Nor is it probable that the interposition operation cures prolapse by affecting the ligaments. This operation, which, as Dr. Blair Bell insists, is only applicable after or near the menopause, has been very largely practised in America; and it is surprising it has not been employed more in this country. Dr. Watkins, to whose work I believe the operation largely holds its place across the water, in a private letter (dated June 23rd, 1919) writes: "My experience has been that all men who have sufficiently tested the transposition operation have become enthusiasts, and that criticism has been offered only by men who have not done the operation." But in one of his papers, Watkins attributes the action of the operation to the effect it has of twisting the broad ligaments. By being twisted, these become shorter, and so are able to support the uterus. I cannot accept this explanation. Does not the interposition operation—or the transposition operation, as Watkins calls it—act by increasing the viscosity of part of the visceral mass, especially that part related to the pelvic floor aperture. I believe it does, and I believe that is why it is so successful in curing prolapse, and especially cystocele. The only doubt in my mind about the use of the body of the uterus in this way, is the question of its freedom from disease, and whether it will remain in a healthy state. It astonishes me that sepsis should so often have complicated this operation. I have only done it twice; and on the first occasion it seemed to me the simplest operation in surgery. In the second case, that of a very stout woman, in whom I was unable to map out the uterus bimanually even with the patient anæsthetised, I had difficulty in delivering the fundus and then found to my surprise a fibroid the size of a pigeon's egg occupying the left half of the fundus. I excised this, and removed two or three other quite small fibroids, and completed the operation. In both patients the wounds healed without any sepsis whatever. Dr. Blair Bell's experience with his 50 cases is similar. But I wonder what will happen in my second case, if any further seedling fibroids develop; and how difficult it would be to remove an interposed uterus if malignant disease supervened.

These considerations make me think that in spite of the excellent results achieved by Dr. Blair Bell's operative work, we have not yet reached the zenith of the operative treatment of prolapse. Something yet remains to be done; but that can only be done when clear ideas obtain as to the nature of prolapse, and the causes which predispose to it are clear to the eye.

I am, Sir, yours faithfully,

Rugby, May 8th, 1920. R. H. PARAMORE, F.R.C.S. Eng.

To the Editor of THE LANCET.

SIR,—In THE LANCET of May 8th, p. 994, Dr. Blair Bell in his lecture on this subject makes two quotations from me, and says that "readers must draw their own conclusions," adding that one of the quotations viewed in the light of the other seems to him "more than illogical." I think he does not realise that there can be retroversion without prolapse, though not prolapsus uteri without retroversion. To use a parable, you can bend without sitting down, though you cannot sit down without bending. Moreover, you can get up again without straightening, and the patient can often be cured of prolapse without correction of the retroversion. I learnt this from Moritz, who investigated some couple of hundred cases three years and more after vaginal operations for prolapse, and found that sometimes the patient said she was completely cured, although on examination the uterus was found to remain retroverted. The operation had converted these cases of prolapse into retroversions without symptoms. In such cases why open the abdomen merely to correct the retroversion, which is doing no harm?

I was foolish enough to read 113 papers on genital prolapse published in 1918. They were all quite unnecessary, and most of them described more or less new and elaborate technical devices. The writers did not appear to know that the results to which they aspired could be secured more easily and safely by methods which had already been published *ad nauseam*.

I am, Sir, yours faithfully,

Manchester, May 9th, 1920. W. E. FOTHERGILL.

STERILISATION OF MILK BY ELECTRICITY.

To the Editor of THE LANCET.

SIR,—In the annotation under this title in your issue of this date there are one or two slight errors which in fairness to others I must ask you to contradict. The work was being done in the Thompson Yates Laboratories when I was appointed to Liverpool. I did not initiate the work, but at the request of the Health Committee of the city I reported on what had been done, suggested further experiments, and in conjunction with Mr. F. C. Lewis, who had carried out the original work, made various alterations in apparatus and methods. Throughout the work Mr. Lewis has been intimately associated with me, and the reports published are joint reports. I feel that it is unfair that credit should be given to me for work which could not have been undertaken and which certainly would never have been brought to a successful issue had I not had the valuable assistance and hearty coöperation of Mr. Lewis.

I am, Sir, yours faithfully,

University of Liverpool, May 8th, 1920. J. M. BEATTIE.

LICE AS A CAUSE OF RINGWORM.

To the Editor of THE LANCET.

SIR,—The letter of Dr. A. E. L. Wear in your issue of May 1st, on the relationship of lice to ringworm, reminds me of an occurrence which happened nigh 40 years ago. On that occasion a patient showed me her forearm, on which there was a well-marked circle of ringworm about the size of a threepenny-piece. When told the nature of the ailment, she asked if it could have been brought to her by a flea, for some four days previously, when serving in her shop, she felt herself bitten at the exact spot at which the ringworm had appeared, but not caring to ascertain at the moment what had taken place, had contented herself with rubbing the part smartly through her sleeve. When the customer had gone, she had turned up her cuff, and "out sprung the flea." I told her that there could be little doubt the flea had brought the disease, and that the vigorous rubbing had implanted it at the bitten part. I made a note of the matter as a curiosity, but failed to grasp its significance, although the fact and its explanation were alike offered to me.

I am, Sir, yours faithfully,

J. ALLAN GRAY, M.A., M.D., F.R.C.P. Edin.

Leith, May 3rd, 1920.

THE DEATH OF DR. A. P. SPELMAN: A MOVING APPEAL.

To the Editor of THE LANCET.

SIR,—I take the liberty of appealing to you on behalf of the widow and children of the late Dr. A. P. Spelman, of Dunmore, Co. Galway. Last week, when returning from a call, his motor-car skidded at a badly protected part of the road, and, overturning, killed him instantly. The deceased was only 26 years of age, and had not his life insured in any way.

Mrs. Spelman and two young children are now left absolutely destitute and totally unprovided for, and in these circumstances I would appeal to your readers for their help.

Thanking you in anticipation,

I am, Sir, yours faithfully,

P. J. DELANEY, M.B.

Claremorris, Co. Mayo, May 4th, 1920.

PS.—We are circularising all the local doctors. Subscriptions, which will be duly acknowledged, may be sent to myself or Dr. T. A. Heneghan, Ballindine, Co. Mayo.

LYME REGIS COTTAGE HOSPITAL.—It is proposed to erect a new cottage hospital at Lyme Regis. The building will contain accommodation for six male and six female patients. There will also be a children's ward, two private wards, operating theatre, and an X ray room. The site has been purchased, the plans prepared, and the chairman of the hospital has issued a strong appeal for financial support.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—G. S. Ashby (Sect. I.), King's Coll. Hosp.; C. C. Bennett (Sect. I.), Guy's Hosp.; A. G. L. Brown (Sects. I. and II.), Westminster Hosp.; A. Furniss (Sect. II.), Manchester; M. Ibrahim (Sects. I. and II.), Middlesex Hosp.; and A. L. Urquhart (Sects. I. and II.), Edinburgh.

Medicine.—R. E. Laurent (Sect. I.), Westminster Hosp.; M. Pigott (Sects. I. and II.), Manchester; and A. L. Urquhart (Sects. I. and II.), Edinburgh.

Forensic Medicine.—E. Brazao, Middlesex Hosp.; J. A. Cohen, King's Coll. Hosp.; M. Pigott, Manchester; and A. L. Urquhart, Edinburgh.

Midwifery.—E. Brazao, Middlesex Hosp.; J. A. Cohen, King's Coll. Hosp.; A. McKenzie, Guy's Hosp.; M. Pigott, Manchester; R. M. Rodriguez, Barcelona; W. H. Summerskill, Guy's Hosp.; and A. L. Urquhart, Edinburgh.

The Diploma of the Society was granted to the following candidates entitling them to practise medicine, surgery, and midwifery:—M. Ibrahim, M. Pigott, and A. L. Urquhart.

THE WHITSUN CONGRÈS DE MÉDECINE AT BRUSSELS.—The Association of French-speaking Doctors is holding its fourteenth congress from Wednesday, May 19th, to Saturday, the 22nd, in the Palais des Académies at Brussels, under the presidency of Dr. Henrijean, professor of medicine at Liége, with whom are associated Professor Bordet and Professor Vandervelde (vice-presidents), and Professor René Verhoogen (secretary-general). The opening ceremony takes place on Wednesday at 4 P.M. The morning sessions commence at 9 A.M. on each following day, being devoted to (Thursday) Cardio-vascular Syphilis, (Friday) the Lipoids in Pathology, and (Saturday) the Therapeutic Value of Artificial Pneumothorax. The afternoon sessions at 4 P.M. are devoted to more general topics, such as the Social Campaign Against Syphilis, the Coagulation of the Blood, and Heredity. On Sunday an excursion to the Yser front and the Flanders coast is in prospect. Further information from the secretary-general, 22 rue Joseph II., Brussels.

UNIVERSITY OF MANCHESTER APPEAL: "THE KING'S SEVENTY."—The fertility of ideas and seductive processes evolved to bring grist to the educational mill of the University of Manchester bring also new surprises almost daily. The latest proposal is that 70 towns or districts or firms should be found, each of which should undertake to raise £5000 to swell the fund and crown the £500,000 required. These to be called "The King's Seventy." The idea has taken root and already two shoots have appeared. The Mayor of Blackpool has intimated to H.M. the King that Blackpool will raise £5000 and Crompton, a much smaller urban district, has intimated that it also will guarantee to raise an equal sum. The star on the barometer-ladder outside the University now stands at £184,000. The *Manchester Guardian* on May 7th issued an interesting illustrated supplement in aid of the same object. It contains, amongst other matters, a message from the Chancellor, Viscount Morley, who says: "It [a good university] is one of the keys and clues for that progress towards making a democracy from which there is nothing to fear and everything to hope." Viscount Haldane discourses on "The Mission of the Civic University," Sir Henry A. Miers on "The University and the Community," and Viscount Bryce on "The Function of a Modern University."

VENEREAL DISEASE CLINICS AND PROFESSIONAL SECRECY.—A deputation from the London and Counties Medical Protection Society, Ltd., was received by Dr. Addison at the Ministry of Health on May 6th. The deputation was introduced to the Minister of Health by Lieutenant-Colonel F. E. Fremantle, M.P., and the chairman of the London and Counties Medical Protection Society (Dr. C. M. Fegen), on behalf of the deputation, urged upon the Minister of Health the necessity for early legislation to protect the medical officers of venereal disease clinics from being compelled in the witness-box to violate the established principles of professional secrecy, and to give information of the nature of their patients' ailments and of anything else which came to their knowledge in their professional capacity. The medical officers of venereal clinics, he said, were being compelled in the law courts, under penalty of imprisonment for contempt of court, to reveal what their patients had communicated to them, believing that the information would be treated as absolutely confidential. The effect of this, it was pointed out, would be disastrous to the working of the venereal disease clinics, and would militate with fatal effect against the present efforts being made to cure and eliminate venereal disease. The Minister of Health expressed his cordial agreement with the views of the deputation, and promised to do what he could to promote legislation as suggested by the deputation. He said that he felt sure that public opinion would support the maintenance of professional secrecy in connexion with venereal disease clinics.

ROYAL SOCIETY OF MEDICINE: WHITSUNTIDE HOLIDAYS.—The Society's house will be closed from Saturday, May 22nd, to Tuesday, May 25th, both days inclusive.

THE Silver Médaille de la Reconnaissance Française has been awarded to Sir StClair Thomson for his valuable services in laryngology.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—A general meeting of this society will be held at 122, Harley-street, W., at 4 P.M., on Monday, May 17th.

CHELSEA CLINICAL SOCIETY.—The annual general meeting of this society will be held on Tuesday, May 18th, at 8.30 P.M., at St. George's Hospital Medical School.

A MATINEE in aid of the Nurses' Home Fund of the Great Northern Central Hospital will be held at the Palladium to-day (Friday).

Sir Thomas Horder will address the League of Youth on Tuesday, May 18th, at 8.30 P.M., in Committee Room B, Central Hall, Westminster, taking as his subject Physical Welfare of the Young: a National Duty. Captain W. E. Elliot, M.P., presides.

Dr. J. S. Fraser, of Edinburgh, will give a lantern demonstration of his micro-photographic slides illustrating Diseases of the Internal Ear at the Central London Throat and Ear Hospital, Gray's Inn-road, on Thursday, May 20th, at 5 P.M.

GRESHAM COLLEGE.—Four lectures, illustrated by lantern-slides, on the Vegetable Parasites Affecting Man, and the Diseases Caused by Them, will be delivered by Sir Robert Armstrong-Jones, at Gresham College, Basinghall-street, London, E.C., on May 18th, 19th, 20th, and 21st, at 6 P.M. Admission is free to men and women.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of tuberculosis officers will be held at 1, Upper Montague-street, Russell-square, London, W.C., on Friday, May 28th, at 3 P.M., under the presidency of Dr. F. N. Kay Menzies, for the purpose of forming a Tubercle Group within the Society of Medical Officers of Health. All tuberculosis officers are invited to attend, even if not members of the society.

HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET.—SPECIAL POST-GRADUATE COURSES.—Mr. A. T. Pitts will give four lectures on the Pathology, Results, and Treatment of Dental Sepsis in Children, on Wednesdays, at 4 P.M., beginning on May 19th, in the out-patient department. Other courses of special instruction for post-graduates in "Diseases of Children," now in progress at this hospital, include lectures on Disorders of the Ductless Glands in Childhood, by Dr. F. Langmead; the Development and Care of the Healthy Child, by Dr. R. S. Frew, on Mondays and Wednesdays, at 4 P.M., beginning on May 3rd (these lectures will be held in the out-patient department); Deformities of Childhood, by Mr. H. A. T. Fairbank; Tuberculosis of Bones and Joints, by Mr. O. L. Addison; and Methods and Significance of Pathological Investigations, by Dr. D. N. Nabarro. The lectures, unless otherwise indicated, are illustrated by cases, specimens, and radiograms. Tickets of admission to each group—price £1 1s.—may be obtained from the secretary at the hospital. The lectures in pathology will be repeated during the months of June and July, and will be held in the Pathological Laboratory.

BRITISH ORTHOPÆDIC ASSOCIATION.—A special meeting will be held in Edinburgh on June 4th and 5th, under the presidency of Sir Robert Jones. The session on June 4th will be held in the systematic surgery class-room, Edinburgh University. In the morning a discussion on the Principles of the Correction of Congenital Talipes Equino-varus and Particularly of Inveterate and Relapsed Cases will be opened by Mr. R. C. Elmslie. Mr. John Fraser will speak on the Results of Tendon Transplantation for Paralyses of the Muscles Below the Knee, Mr. S. Irwin on Acute Arthritis of the Hip in Infants, and Mr. Harry Platt on Traumatic Dislocation of the Knee-joint. In the afternoon Professor V. Putti (Bologna) will read a paper on the End-Results of Arthroplasty of the Knee-joint, Dr. Murk Jansen (Leyden) on Hallux Valgus, Rigidus and Malleus, and Mr. E. W. Hey Groves on the Vital and Mechanical Factors in Bone-grafting. Some Notes on Bone, Fascia, and Tendon-grafting will be communicated by Mr. A. P. Mitchell, and the Possibilities of End-to-end Suture After Extensive Nerve Injuries will be discussed by Miss Forrester-Brown. A demonstration of kinematographic records illustrating the Various Types of Gaits in Children will be given by Mr. John Fraser. At 7.30 P.M. the association dinner will be held. On Saturday, June 5th, at 9.30 A.M., Sir Harold Stiles will operate and demonstrate cases at the Edinburgh Royal Infirmary.

BY a decision of Convocation on May 11th the degrees of Oxford University were opened to women on the same terms as to men.

Sir William Osler has left his library of valuable medical and scientific works to the medical faculty of McGill University, Montreal. His house at 13, Norham-gardens, Oxford, in which Lady Osler has a life interest, has been bequeathed as the official residence of the Regius professor of medicine in the University.

THE strike of workers in the drug and fine chemicals trade may become general. A demand is made for an advance of 10s. a week in wages for all grades. Minimum rates for men are at present stated to be: drug grinders, pill and tablet makers, 65s. a week; packers, 62s. 6d. a week; bottle washers, 60s. a week.

PEOPLE'S LEAGUE OF HEALTH.—At the Mansion House meeting on May 11th Mr. C. J. Bond reviewed the loss to the nation occasioned by chronic ill-health, and suggested that the individual responsibility of each citizen for his own health should be emphasised. It was, he said, wrong to be ill if illness could be avoided. The "will to health" was taken up by subsequent speakers.

THE LATE MR. F. J. JOYNES.—Francis James Joynes, M.R.C.S., L.S.A., died recently at his residence, Wanswell, near Berkeley, Gloucestershire, in his seventy-eighth year. Mr. Joynes had retired from active work, but at one time he had an extensive practice at Dursley, Gloucestershire, and was for many years medical officer of health for the Dursley rural district.

TRINITY COLLEGE, DUBLIN: POST-GRADUATE LECTURES.—During the past winter the medical authorities provided four afternoon courses of five or six lectures each, open alike to medical men and all medical students. The lectures, dealing with such useful subjects as the pathology of bones, gynæcological pathology, the pathology of nerves, and chemical pathology, were delivered respectively by Mr. S. Pringle, Dr. R. J. Rowlette, Dr. F. C. Purser, and Dr W. Fearon. This term the Honorary Professor of Dermatology, Dr. Wallace Beatty is delivering a course of three lectures on Parasitic Affections of the Skin. Dr. Gordon Holmes, of London, is to deliver his concluding Montgomery Lecture on the Mechanism of the Conjugate Movements of the Eyes.

THE FIGHT AGAINST TUBERCULOSIS AT BRIGHTON.—At an enthusiastic meeting under the auspices of the Women's Local Government Association and the Brighton, Hove, and Preston Division of the British Red Cross Society at Hove, on May 7th, the Countess of Chichester presiding, the following resolution was unanimously carried:—

That Parliament be urged to make such provision as will enable local authorities throughout the country to undertake comprehensive measures for the prevention of tuberculosis, and for the treatment and care of tuberculous patients and their dependents.

Among the speakers were Sir H. Kingsley Wood, M.P., and Sir Malcolm Morris. The former said he believed that Brighton had been the first municipality to provide institutional treatment for tuberculosis. He urged the need of proper, up-to-date, well-equipped sanatoriums up and down the country. Sir Malcolm Morris spoke of three great factors in the problem—heredity, infection, and environment, the greatest of which was the last. Mr. H. Milner Black, a member of the Brighton Corporation, said 300 or 400 people died from tuberculosis quite needlessly in Brighton and Hove every year, and strongly urged a great campaign throughout the country, not merely to mend the disease, but to end it.

NEW CLINICAL LABORATORIES AT SWANSEA.—On May 7th Sir George Makins visited the city hospital to open the new clinical laboratories, recently erected through the generosity of Mr. Roger Beck. Sir George Makins, when performing the ceremony, spoke of the place filled by clinical laboratories in the science and mystery of medicine; the mystery is practised at the bedside, but the science on which it is based is founded on work carried out in the laboratory. Without practice there would be danger of the science becoming an abstract study; but without the science practice would become empty empiricism. The value of laboratory research had been immense, during the war, in improving the treatment of wounds, in combating the onset of shock, and in disclosing the causation of trench fever. During peace, similar valuable results beneficial to the race might be expected from establishment of laboratories such as he was opening. He congratulated Swansea on its new institute, which, by assisting the scientific work of the medical profession, would be a material asset to the health of the whole district. Professor D. Hepburn, speaking for the Welsh National School of Medicine, pointed out that Swansea was fortunate, not only in its new institute, but also in its director, Dr. A. F. S. Sladden.

Colonel Sir Edward Thornton, formerly in charge of the South African Military Hospital at Richmond, Surrey, has been appointed chief assistant to the medical officer of health for the Union of South Africa.

ROYAL DEVON AND EXETER HOSPITAL AND EXETER DISPENSARY: PROPOSED AMALGAMATION.—At the last meeting of the governors of the Royal Devon and Exeter Hospital it was reported that, as a result of a meeting of the representatives of the Hospital and Exeter Dispensary, it was decided to appoint two members of each institution, under the presidency of the mayor, to draw up a scheme for the amalgamation or better working of the two charities.

THE LATE DR. SYMES SAUNDERS.—**George James** Symes Saunders, M.D., M.R.C.P. Lond., M.R.C.S., L.S.A., D.P.H. Camb., died at his residence at Eastbourne, on April 28th, in his eighty-sixth year. He was educated at Exeter, and received his medical education at King's College Hospital, London. Dr. Symes Saunders was for nearly 50 years resident physician-superintendent at the Devon County Asylum, Exminster, but retired from active work about 15 years ago.

ARMENIAN RED CROSS AND REFUGEE FUND: FIFTH ANNUAL REPORT.—The satisfactory balance-sheet of this fund is due less to the actual amount of donations and subscriptions in 1919, than to the fact that working expenses have been kept down to a minimum. It is stated that all work in connexion with this fund is voluntary and practically the only expenses entailed have been those of printing and postage. The needs of Armenia have not diminished, and parcels of clothes, especially socks, stockings, and boots, will be gratefully received by Miss Aganoor, the honorary secretary, Armenian Ladies Guild, 47A, Redcliffe-square, London, S.W. 10. Contributions and all letters relating to the fund should be address to the honorary secretary, Miss Emily J. Robinson, 35A, Elsham-road, London, W. 14.

MUNICIPAL MILK.—**By a majority of one vote the** Manchester City Council has approved the scheme for the municipalisation of milk distribution already outlined in THE LANCET. The proposal will be included in the next Parliamentary Bill. The Health Committee's arguments in support of the proposal were that as supplied at present Manchester milk would all be classed C 3 according to American grading, and would be allowed for use only for cooking and for manufacturing purposes; that impure milk was largely responsible for tuberculosis in children, and that one-third of the deaths of children under 5 years of age could be attributed to bovine infection. If men's beer contained as much dirt as children's milk it would be condemned for consumption. Adulteration was so common that Manchester citizens paid £35,000 yearly for water.

DEVON EDUCATION COMMITTEE AND MEDICAL FEES.—At the last meeting of the Devon Education Committee it was reported that the appointment of assistant school medical officer at a salary of £400 per annum had been advertised in lay papers, as the medical papers had refused to insert the advertisement for a whole-time medical officer at a salary of less than £500 a year. Six applications had been received, but five of these withdrew because warning notices had been issued by the British Medical Association, and the remaining candidate was appointed. It was stated that the school medical officer for the Barnstaple district had just resigned, as he found it impossible to live on the salary of £400 a year. Eventually it was decided that the salaries of the school medical officers, which are from £400 to £500 yearly, should be increased annually by £20 until £500 are reached.

THE LATE DR. P. B. KELLY, D.S.O.—**Peter Burrowes** Kelly, who died on April 6th, was born in Ireland and received his medical education first in Dublin, where he obtained a medal for chemistry, histology, and medicine, and later at St. Bartholomew's and Charing Cross Hospitals, London. Having obtained the diplomas L.R.C.P. & S. Irel., and L.M. in 1911, he joined the Royal Navy on August 4th, 1914, and served first at Antwerp. He then volunteered for service on H.M. Transport *River Clyde*, the ship which was run ashore at Gallipoli to facilitate the landing of troops. He was wounded in the foot during the disembarkation, but still continued to attend the wounded; for this and other gallant services he was awarded the D.S.O. He served at Gallipoli until the army was withdrawn. His last appointment was at the Royal Naval College at Osborne, where he lived through several severe epidemics before his retirement from the Royal Navy in August, 1919. Immediately after leaving the navy, and without any interval of rest, he commenced civil practice in London, but his health rapidly declined, and he died on April 6th at the residence of his brother, Dr. J. Kelly, Crookstown House, Ballytore, co. Kildare, leaving a wife and one child.

THE ROYAL SOCIETY CONVERSAZIONE. — On Wednesday evening, May 12th, Sir J. J. Thomson, President of the Royal Society, received at a conversazione a large number of guests, for the most part well known in scientific circles. Demonstrations were given in the Committee and Meeting Rooms on the ground floor by Mr. Campbell Swinton (Exposition of Wireless Telephony in connexion with an experimental demonstration by the Marconi Company from Chelmsford); Sir Charles Parsons (Water-Hammer Cone demonstrating the Destructive Effect of Collapsing Vortex Cavities); and Mr. Edwin Edser (the Concentration of Minerals and Coal by Froth Flotation). Among the exhibits of particular medical interest may be mentioned the new instruments and diagrams from the Meteorological Office; a method of demonstrating flagellæ on micro-organisms, devised by Mr. J. E. Barnard and Dr. W. Topley; a demonstration by Professor Nuttall and Dr. D. Keilin of hermaphroditism in the louse; and Professor E. Mellanby's demonstration of the effect of vitamines on puppies.

CHELSEA HOSPITAL FOR WOMEN.—**The forty-**ninth annual meeting of the Governors was held at the hospital on April 23rd, Sir F. W. R. Fryer in the chair. The report stated that 760 patients had been treated during the past year; the greater number were very critical cases and the rate of mortality was 1½ per cent. only. Increasing costs were giving the council grave concern, and it was feared that without the help of a much larger number of supporters the hospital would be seriously in debt by the end of the current year. The building of a home for the nurses was now an urgent necessity. Pending its completion half the beds in the hospital had to be used to house the nurses and servants, and consequently the list of patients awaiting admission was abnormally high. £7000 was in hand for the Home and £20,000 more was needed. The Convalescent Home at St. Leonards also needed additional support.

THE MEDICAL SOCIETY OF LONDON: ELECTION OF OFFICERS AND PRESENTATION OF FOTHERGILLIAN MEDAL.—At the annual general meeting of the Medical Society of London held on May 16th the following officers and members of the Council were elected for the session commencing in October, 1920:—

President: Sir William Hale White.
Vice-Presidents: Dr. F. J. H. Bateman, Sir Hugh Rigby, Dr. Hugh Lett, Sir F. W. Mott.
Secretaries: Dr. W. H. Willcox, Mr. H. W. Carson.
Treasurer: Dr. J. Mitchell Bruce.
Librarian: Dr. Arthur Francis Voelcker.
Honorary Secretary for Foreign Correspondence: Dr. Herbert R. Spencer.
Council: Dr. Donald Armour, Mr. E. C. Bridges, Mr. C. C. Choyce, Dr. F. G. Crookshank, Dr. H. A. Des Vœux, Sir H. J. Gauvain, Dr. C. E. Lakin, Mr. T. P. Legg, Dr. E. E. Lewis, Mr. H. N. Matthews, Mr. C. S. Murray, Mr. C. J. Ogle, Dr. D. Lloyd Roberts, Mr. Percy Sargent, Mr. James Stewart, Dr. P. Montague Smith, Mr. W. W. Stocker, Dr. A. H. Vassie, Dr. G. E. Ward, Dr. Leonard Williams.

The annual oration was delivered by Sir D'Arcy Power, who chose for his subject "The Rev. John Ward and Medicine," which appears in this issue of THE LANCET. The President, Mr. V. Warren Low, on behalf of the society, presented the Fothergillian gold medal for 1917 to Sir Leonard Rogers for his work in connexion with dysentery. In expressing his thanks to the society Sir Leonard Rogers said that his appreciation of the honour was enhanced by the fact that he was a stranger to most of those present and that the medal was handed to him by his old friend and fellow-student, Mr. Low. It was a great encouragement to him to persevere with his work.

THE LATE DR. J. H. FULLARTON.—**John Hamilton** Fullarton, who died suddenly at his residence in Porchester-gardens on May 6th, was a well-known marine biologist, and in later years he had a large consulting medical practice in the West-End of London. A native of Arran, he was born in 1856, and studied medicine at Glasgow and at Leipzig. At Glasgow University he graduated in science in 1880, obtaining the doctorate in 1891. He passed a brilliant studentship, being Exchequer Bursar in 1876 and winning the John Clark, Jun., Scholarship in 1879. In 1881 he proceeded to the M.A. degree, taking the highest honours in natural science, and in the same year won the G. H. Clark Fellowship in natural science. He was then for some years assistant to the late Professor John Young. In 1906 he obtained the triple qualification of Edinburgh and Glasgow. Dr. Fullarton, who had been an examiner at the University of Glasgow for the M.B., B.Ch. degrees, and a lecturer on biology at Queen Margaret College, was a Fellow of the Royal Society of Edinburgh, and a member of many foreign scientific societies. For some years he was zoological superintendent of the Scottish Fishery Board Marine Laboratory, and his writings on the subject of marine life have been translated into most European languages. A man of decided views, neither science nor medicine filled his whole life, and a few weeks before his death he was engaged in an active campaign at a Scottish by-election.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

General Medical Council Bill.

Sir HENRY CRAIK presented a Bill in the House of Commons on Monday, May 10th, "to amend Section 8 of the Medical Act, 1886." The Bill, which was supported by Captain ELLIOT and Lieutenant-Colonel RAW, was read a first time. The object of the Bill is to provide that all Direct Representatives on the General Medical Council are to retire at the end of a five years' period. Vacancies occurring during the five years' period are to be filled only as to the remaining term of that period. At present the Direct Representatives on the General Medical Council—that is, those elected by the general body of practitioners—hold office by Statute for five years. The result has been that when death has occurred the successor to the dead representative is elected not to finish the term of his predecessor's office but for the full term of five years, with the consequence that elections have been multiplied. The present Bill is introduced by Sir HENRY CRAIK, with the goodwill of the Privy Council.

HOUSE OF COMMONS.

WEDNESDAY, MAY 5TH.

War Pensions Bill.

Mr. MACPHERSON (Minister of Pensions) in moving the second reading of the War Pensions Bill said that the administration of pensions cost as much as £5,000,000 a year. The Great War was now over, and the situation had to be reviewed. The call for economy was in the air. If the transfer of administration proposed in the Bill was not agreed to, it would mean that pensions cases would have to be considered by two different departments. Therefore, in the interests of economy and efficiency the Government had come to the conclusion that the administration of post-war pensions should be handed over to the Service Departments. Nothing in the Bill interfered with the existing powers of the Ministry of Pensions. The Bill defined the end of the war as July 31st of this year, and kept alive Section 3 of the War Pensions Act, 1919, which provided for advances of pensions to pensioners for periods not exceeding six months. It was further proposed to transfer to the Ministry of Pensions wound pensions to officers. The work of the Pensions Committees had become largely stereotyped and standardised, and some of the country committees themselves realised that the continuance of their splendid work was no longer required. He was taking power in the Bill to reorganise and regroup the various divisions in the county with a view to securing the best possible administration, while reducing as far as he could the amount of expenditure. He proposed wherever he thought it desirable to substitute for the present county committees local committees acting independently over wide areas within the county. He also sought powers to appoint a finance officer to take charge of the finance of committees at any time when he thought it necessary in the public interest. The Ministry of Pensions would remain with all its powers to deal with the great work which it was called upon to do by various Acts in connexion with the pensions which had arisen out of the Great War. All post-war pensions would revert, as they would without legislation to the contrary, to the services in which the man had served.—Mr. HOGGE moved the rejection of the Bill. He said that he had hoped that they had destroyed separate pension departments for the separate arms of the forces, but now it was proposed to set them up again.—Several honourable Members criticised the decentralising policy of the Bill.—The Bill was read a second time.

Shortage of European Medical Officers in India.

Sir WILLIAM JOYNSON-HICKS asked the Secretary for India whether he was aware of the shortage of European doctors in the Indian Medical Service; and whether he was prepared to give an assurance to the Europeans in India that the utmost effort was being made to provide a European doctor within reasonable access of military and civilian officials and their families.—Mr. MONTAGU replied: The shortage of European medical men in the Indian Medical Service has engaged my anxious attention for the last two years, and every effort is being made to overcome it. I am alive to the great importance of a sufficient supply of European medical men.

Portsmouth Claim for Compensation.

Major Sir BERTRAM FALLE asked the Secretary to the Admiralty if he was aware of the claim to compensation made by Robert E. Read, ex-hired skilled labourer, Portsmouth Dockyard; that this man had been ordered to come to London to be reported on by a medical referee; that Read's state of health was such that he could not travel without an attendant, which had been granted by the Admiralty, and must be conveyed in cabs to and from the station and the doctor; if there were no competent and honourable surgeons in Portsmouth who could be asked to report and save this invalid the trouble and pain of a long journey and the State an extravagance; and if he would see to the matter and future and similar cases.—Sir J. CRAIG replied: Arrangements were made for Read's examination by the Government medical referee under the instructions of the Treasury and in accordance with the terms of the Government scheme of compensation. In cases in which it is considered sufficient to have the man examined locally this is invariably done, but where the Admiralty and the private doctors disagree it is generally considered advisable to refer such cases for the decision of the referee. On the available facts in this case arrangements were made accordingly, but in view of the suggestion that Read is unfit to travel the Treasury is in communication with the medical referee with a view to considering whether arrangements can be made for his examination by a local practitioner.

Forthcoming Dental Legislation.

Mr. GILBERT asked the Minister of Health whether he proposed to bring in a Bill to carry out the recommendations of the Departmental Committee on Dentistry of last year; and, if so, could he state when it would be introduced.—Dr. ADDISON replied: A Bill is now in course of preparation, and it is hoped to introduce it before the end of this month.

Notification of Births.

Sir HENRY HARRIS asked the Minister of Health whether his attention had been called to the difficulty of obtaining convictions for failure to notify births under the Notification of Births Act, 1907, such difficulty being due to the wording Paragraph (3) of Section 1 of that Act; and whether it was proposed to introduce legislation to make effective the obligation to notify births.—Dr. ADDISON replied: I am aware that the wording of the statute has caused difficulties, and the matter will receive consideration.

Medical and Funeral Expenses of Service Men.

Mr. GRATTAN DOYLE asked the Secretary for War and Air if the War Office was empowered to pay the medical and funeral expenses of those officers and men who lost their lives within a few days of their arrival home, after having been demobilised, in February, 1919, where it could be shown that the cause of death was the result of illness contracted on the journey through France owing to the authorities having failed to provide suitable accommodation during the journey, the officers and men having been required to travel in cattle trucks and having been held up at the French ports and required to sleep in tents for several nights when the thermometer was at zero; and, if the War Office was not empowered to pay such expenses, if he would obtain the necessary powers to do so.—Sir A. WILLIAMSON (Financial Secretary to the War Office) replied: The powers of the War Office in these matters are not automatically terminated by demobilisation of the person concerned. If the honourable Member will furnish me with any specific cases I will have them investigated.—Mr. DOYLE: If the right honourable gentleman will look at the records of the War Office he will find that I have furnished him with some specific cases.—Sir A. WILLIAMSON: I shall be very pleased to make inquiry.

Motor-car Rebates for Medical Men.

Sir WILLIAM JOYNSON-HICKS asked the Minister of Transport whether it was intended, under the new scheme for the taxation of mechanically propelled motor vehicles, to grant any special privileges, exemptions, or rebates in respect of motor-cars used by doctors and veterinary surgeons similar to the privileges enjoyed by them under the present system of taxation; and, if not, upon what grounds it was proposed to withdraw the existing privileges.—Mr. NEAL (Parliamentary Secretary to the Ministry of Transport) replied: There is no intention to give special privileges to these classes of motor-car users. This question was carefully considered by the Departmental Committee on Taxation and Regulation of Road Vehicles, and the reasons for the withdrawal of existing privileges are set out in par. 23 of their report. The rebates which these users now enjoy were conceded partly in order to bring them into line with commercial motor vehicles, which pay no Inland Revenue duty and are entitled to a rebate of half the duty on motor spirit. With the abolition of preferential treatment to commercial users the case for medical practitioners and veterinary surgeons necessarily fails. There could be no justification for exempting members of two professions only. Every person using a motor-car in connexion with his profession or business would be equally entitled to preferential treatment. The concession to medical practitioners and veterinary surgeons was made when motor-cars were taxed as luxuries. This is now no longer the case. The proposed tax is, in fact, a tax upon road users for road purposes.

New Incidence of Income-Tax.

Major STEEL asked the Chancellor of the Exchequer whether his attention had been called to the severity of the proposed scale of graduation of income-tax in the Finance Bill on those whose income was between £600 and £2000 a year; and whether it was a fact that the proposed rate of tax per pound did not increase progressively with income between these two figures.—Mr. CHAMBERLAIN replied: My honourable and gallant friend is mistaken. Taxpayers whose total incomes fall within the limits specified in the question will, as a class, pay substantially less in income-tax under the Budget proposals than they would have had to pay under the law previously in force, and, as is shown by the graphs reproduced in House of Commons Paper No. 71, the effective rate of tax under the new scheme rises by an even progression between the two limits. I may add that the relief given under the Budget proposals to persons having incomes between £600 and £2000 per annum is no less than £3,500,000. There are, of course, individual cases in which the liability will be greater under the new scheme. Those cases arise from two causes—heavier charge thrown upon unmarried persons above £300 per annum and the smoothing of the jumps in the old scale.

Alleged Consumption of Deleterious Compounds.

Mr. CLOUGH asked the Minister of Health if his attention had been called to the alleged growth of the consumption of deleterious compounds, such as methylated spirits, among people affected by the high price and scarcity of ordinary stimulants; whether his department had any information on the subject; and what steps it was taking in the matter.—Dr. ADDISON replied: No evidence has been brought to my notice of the growth of the practice referred to, nor have I any special information on the subject. The cause suggested by the honourable Member is not a matter within my jurisdiction.—Mr. CLOUGH asked the Chancellor of the Exchequer if he had considered the possibility of people consuming deleterious substances owing to the high price and scarcity of ordinary stimulants; and whether he would reconsider the new taxation from the point of view of the public health.—Mr. CHAMBERLAIN replied: I do not share the apprehension entertained by my honourable friend.

THURSDAY, MAY 6TH.

Staff of the Pensions Ministry.

Mr. ROBERT YOUNG asked the Pensions Minister if he would state the number of persons employed by the Ministry and appointed during the year ended March 31st, 1920, at salaries over £350 per year; what was their previous experience of war pensions work or work qualifying them for such appointments; and how many were in receipt of salaries and income from other public funds, not including disability pensions.—Mr. MACPHERSON replied: The number of officers appointed to the Ministry during the year ended March 31st, 1920, and employed at salaries exceeding £350 a year is 51—namely, 13 permanent civil servants, 23 temporary officials with previous experience in other Government departments, 9 ex-Regular army and navy officers, and 6 temporary officials with special qualifications. It is not possible to say how many of the above-mentioned officers had previous experience of war pensions work. Approximately 15 are in receipt of income from other public funds, apart from disability pensions. These numbers exclude 552 medical officers appointed during the same period, of whom 12 are in receipt of income from other public funds.—Mr. SHORT: Can the right honourable gentleman say what public funds?—Mr. MACPHERSON: I cannot say offhand.—Mr. YOUNG: Will preference be given to those who have no pension or income over those who have?—Mr. MACPHERSON: I do not see how that is possible.—Mr. P. BILLING: Surely it is advisable to select from those who have served those who have no pensions or other income?—Mr. MACPHERSON: That certainly ought to be considered, but there are obviously other considerations.

Decisions by Local Medical Referee.

Mr. GRANT asked the Pensions Minister if he was aware that decisions come to by the local medical referee in the cases of disabled soldiers whom he had personally examined could be arbitrarily overruled by the Deputy Commissioner of Medical Services without this official having had opportunity of personal inspection of the cases; and if he could see his way to alter this regulation.—Mr. MACPHERSON replied: I am sending my honourable friend a copy of the revised Circular 804, from which he will observe that the Deputy Commissioner of Medical Services cannot overrule the medical referee on a question of treatment allowances unless and until the man has been re-examined either by the Deputy Commissioner himself or by a medical officer of the region.

Financial Position of the London Hospitals.

Mr. ROBERT YOUNG asked the Minister of Health whether he was aware that some of the London hospitals were in a serious financial position, and that appeals were being made in our elementary schools to the children, and through them to the parents, for assistance to prevent some of them partly closing down or otherwise curtailing their very necessary and beneficent work; and if he would say whether any steps were likely to be taken by legislation or other means to place these institutions on a sound footing to carry on their activities in the interests of the nation.—Dr. ADDISON replied: In view of the urgent representations which have recently been made to me in regard to the financial position of certain of the London hospitals, I am considering what steps can be taken to meet the difficulty, which, I hope, is only temporary, but I am not yet in a position to make a definite statement on this matter, which necessarily involves far-reaching issues.

Health Conditions in Berwick Rural District.

Mr. WILLIAM THORNE asked the Minister of Health if his attention had been called to the report of Dr. McWhir, medical officer to Berwick rural district, about the health conditions of the parish, where the people lived in hovels as a mere shelter from the wind and weather; if he was aware that the medical officer had called attention to the state of the overcrowded dwellings where young men and women were herded together in one sleeping compartment; was he aware that the medical officer also stated that the overcrowding was a close connexion to tuberculous disease; and if he would take action in the matter.—Dr. ADDISON replied: I am aware of the report in question. A report on the housing conditions has also been made by one of my officers. The first requirement is obviously that the district council should press forward with their new housing schemes, and I am taking steps to secure that this is done.

Recovery of Fats from Sewage.

Mr. ALFRED T. DAVIES asked the Minister of Health if he would state how many public authorities now possessed plant for the recovery of fats from sewage; and what steps, if any, were being taken by the Ministry to prevent fats so obtained from being used for the manufacture of foodstuffs—e.g., margarine.—Dr. ADDISON replied: So far as I am aware, there are only four local authorities which possess plants for the recovery of fats from sewage on a large scale. I have no reason to suppose that the fat recovered in these cases is used in the manufacture of foodstuffs. If my honourable friend has any information on the subject I should be glad to be supplied with it.

MONDAY, MAY 10th.

National Insurance Bill.

In reply to questions by Sir J. BUTCHER and Mr. MYERS, Mr. BONAR LAW stated that it was intended to bring the National Insurance Bill into operation on July 5th, 1920, and this would be possible if it passed quickly through its remaining stages. The Government hoped that it would be possible to get the Report and Third Reading stages in the House of Commons this week.

Milk and Dairies Bill.

Dr. ADDISON introduced a Bill "to amend the Milk and Dairies (Consolidation) Act, 1915." The Bill was read a first time.

TUESDAY, MAY 11TH.

Medical Officers at Pensions Ministry.

Mr. ROBERT YOUNG asked the Minister of Pensions whether the medical and other officers employed by the Ministry at salaries over £350 a year, and who, in addition, were in receipt of income from other public funds, were all disabled men; and would he say from which public funds such income was derived, and what was the amount in each case apart from disability pension.—Major TRYON (Parliamentary Secretary to the Ministry of Pensions) replied: The numbers, amount, and source of income from other public funds are as follows:—

No.	Amount of pension, &c.	Source.	No.	Amount of pension, &c.	Source.
1.	£120	War Office.	1.	£500	War Office.
1.	£150	" "	1.	£510	Admiralty.
1.	£164	Admiralty.	2.	£600	"
1.	£173	War Office.	1.	£600	War Office.
1.	£190	Admiralty.	1.	£780	" "
2.	£365	War Office & Admiralty.	2.	£800	" "
1.	£426*	Sudan Govt.	1.	£900	India Office.
1.	£440	India Office.	2.	£1000	War Office.
1.	£451	War Office.	1.	£1010	Admiralty.
			1.	£1040	War Office.

* This officer receives in addition £120 from the War Office.

The officers referred to are not all disabled, and the amounts given above do not in any case include disability pensions.

Venereal Disease in the Army.

Captain ELLIOT asked the Secretary for War whether he was aware of the continual and alarming rise in the incidence of venereal disease amongst the British troops in France and Germany; whether he would take all possible steps to

combat this, and whether in particular the privilege of free leave passes to Great Britain, recently withdrawn from these troops, could now be restored.—Mr. CHURCHILL replied: I am aware that there has been a rise in the incidence of venereal disease amongst the troops in France and Germany since the armistice. The subject has received anxious consideration for some months past and I am satisfied that the authorities on the spot are taking all possible steps to combat it. As regards the last part of the question, I would refer the honourable and gallant Member to my previous replies. The decision was only reached after very careful consideration.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, May 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Wednesday, May 19th.

HISTORY OF MEDICINE (Hon. Secretaries—Arnold Chaplin, F. G. Crookshank): at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1920–1921.
Paper:
Dr. Withington: The Medical Terms in Liddell and Scott.

Thursday, May 20th.

DERMATOLOGY (Hon. Secretary—Henry MacCormac): at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1920–1921.
Cases (at 4.30 P.M.):
Dr. Semon: Livido Reticularis, with Positive Wassermann Reaction.
Dr. Parkes Weber: Chronic Fibroid Subcutaneous Gummata associated with Indurative Cavernitis.
Dr. Bunch: (1) Multiple Granulomata; (2) Lymphangioma.
Dr. MacCormac: Acanthosis Nigricans.

Friday, May 21st.

OTOLOGY (Hon. Secretaries—H. Buckland Jones, Lionel Colledge): at 5 P.M.
Annual General Meeting—Election of Officers and Council for 1920–1921.
Notes on Cases by—
Mr. H. Bedford Russell (introduced by Mr. Buckland Jones), Mr. J. S. Fraser, and others.

ELECTRO-THERAPEUTICS (Hon. Secretaries—Walter J. Turrell, Stanley Melville).
Annual Dinner at the Langham Hotel at 7.30 P.M. Price of tickets, 10s. 6d. (exclusive of wine). Will Members wishing to attend send in their names to Dr. Melville, 9, Chandos-street, W. 1, not later than May 15th.
Election of Officers and Council for 1920–1921.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, May 18th.—4.30 P.M., Pathological Specimens. Cases sent for Consultation. Clinical Cases will be shown by Dr. J. L. Bunch, Dr. W. K. Sibley, Dr. W. Griffith, Dr. J. Forbes, Dr. G. White, Dr. M. G. Hannay, and Dr. Morrison.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, May 17th.—2 P.M., Dr. G. Stewart: Medical Out-patients. 5 P.M., Mr. D. Armour: Principles of Abdominal Drainage.
TUESDAY.—Annual Meeting of Ladies' Association. College closed.
WEDNESDAY.—11.30 A.M., Mr. MacDonald: Demonstration of Cystoscopy. 5 P.M., Dr. Beddard: Practical Medicine.
THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 5 P.M., Dr. D. Robinson: "Gynæcology."
FRIDAY.—12.15 P.M., Dr. Burnford: Applied Pathology. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear.
SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon: Mr. Sinclair: Surgical Anatomy of the Abdomen.
Daily:—10 A.M., Ward Visits. 2 P.M., In-patient and Out-patient Clinics and Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, May 17th.—2.30 P.M., Mr. J. B. Banister: Gynæcological.
TUESDAY.—9.45 A.M., Lieut.-Col. R. H. Elliot: Selected Eye Cases and Operations. 2.15 P.M., Selected Cases:—Mr. C. H. Hayton: Catarrhal Conditions of the Nose and Throat with Associated Deafness. 3.15 P.M., Dr. J. Metcalfe: Radiological Diagnosis of Pulmonary Tuberculosis. 4.30 P.M., Lecture:—Dr. R. M. Leslie: Pulmonary Tuberculosis in Children.
WEDNESDAY.—2.30 P.M., Dr. W. J. Oliver: Dermatological.
THURSDAY.—2.30 P.M., Mr. N. Fleming: Eye Cases. Dr. J. Metcalfe: Radiology.
FRIDAY.—2.30 P.M., Dr. C. G. Sundell: Diseases of Children.
SATURDAY.—3 P.M., Mr. Carson: Selected Surgical Cases.
Daily:—2.30 P.M., Operations, Medical and Surgical Clinics, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.
MEDICAL SCHOOL.
MONDAY, May 17th.—2–3.30 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Dr. Aldren Turner: Neuroses.
TUESDAY, May 18th.—2–3.30 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Dr. Risien Russell: Demonstration of Ward Cases.
WEDNESDAY, May 19th.—2 P.M., Mr. Sargent: Sequelæ of Head Injuries. 3.15 P.M., Mr. Scott: The Treatment of Menière's Disease.
THURSDAY, May 20th.—2–3.30 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Dr. Aldren Turner: Psycho-neuroses.
FRIDAY, May 21st.—2–3.30 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Collier: Demonstration of Ward Cases.
Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
Special Post-Graduate Courses in Diseases of Children, illustrated by cases, specimens, and radiograms.
1.—Dr. F. Langmead: Disorders of the Ductless Glands in Children (in the Museum)—
TUESDAY, May 18th, AND FRIDAY.—11.30 A.M., Lecture III., Disorders of the Pituitary Gland. Lecture IV., Disorders of the Adrenal Glands.
2.—Dr. R. S. Frew: The Development and Care of the Healthy Child (in the Out-patient Department)—
MONDAY, May 17th, AND WEDNESDAY.—4 P.M., Lectures V. and VI.
3.—Mr. H. A. T. Fairbank: Deformities of Childhood (in the Museum)—
MONDAY, May 17th, AND THURSDAY.—4.30 P.M., Lecture V., Congenital Talipes; Birth Palsy. Lecture VI., Flat Foot; Genu Valgum and Varum; Curved Tibiæ.
4.—Mr. O. L. Addison: Tuberculosis of Bones and Joints (in the Museum)—
TUESDAY, May 18th, AND FRIDAY.—4 P.M., Lecture V., Hip. Lecture VI., Other Bones and Joints; Knee; Ankle; Shoulder; Elbow; Wrist, &c.
5.—Mr. A. T. Pitts: The Pathology, Results, and Treatment of Dental Sepsis in Children (in the Out-patient Department)—
WEDNESDAY, May 19th.—4 P.M., Lecture I., The Pathology of Dental Caries: Affections of the Gums.
6.—Dr. D. N. Nabarro: Methods and Significance of Pathological Investigations (in the Pathological Laboratory)—
TUESDAY, May 18th, AND FRIDAY.—5 P.M., Lecture V., Examination of Urine. Lecture VI., Vaccine Therapy.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).
A Course of Post-Graduate Lectures on Syphilis is being given by various members of the staff of King's College Hospital during the present year.
FRIDAY, May 21st.—9.15 P.M., Dr. J. C. Briscoe: Syphilis in Medical Practice (other Visceral Lesions).

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.
MONDAY, May 17th.—2 P.M., Dr. Melville: X Ray Department.
TUESDAY.—2 P.M., Dr. D. Grant: Throat Department. 2.30 P.M., Demonstration:—Dr. Wingfield: Cases Suitable for Sanatorium
WEDNESDAY.—10.30 A.M., Dr. Punch: Demonstration of Museum Specimens. 2 P.M., Dr. Gosse: Cardiographic Department. 2.30 P.M., Demonstration:—Dr. Beaumont: Cases Unsuitable for Sanatorium.
THURSDAY.—10.30 A.M., Dr. Burrell: Artificial Pneumothorax. 2.30 P.M., Demonstration:—Dr. Wingfield: Cases Unsuitable for Sanatorium.
FRIDAY.—2 P.M., Dr. Melville: X Ray Department. 2.30 P.M., Demonstration:—Dr. Maitland: Cases Suitable for Hospital Treatment.
SATURDAY.—1 P.M., Dr. Batty Shaw: Special Demonstration in the Out-patient Department.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.
MONDAY, May 17th.—5.30 P.M., Post-Graduate Lecture:—Dr. R. Wells: The Electrocardiograph in Practical Medicine. (1.)

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.
THURSDAY, May 20th.—5 P.M., Lantern Demonstration:—Dr. J. S. Fraser (Edinburgh): Micro-photographic Slides illustrating Diseases of the Internal Ear.

UNIVERSITY OF LONDON.
Advanced Lectures in Physiology to Students of the University and others interested in the subject.
A Course of Eight Lectures on Nutrition will be given at King's College for Women (Household and Social Science Department), Campden Hill-road, Kensington, W.
MONDAY, May 17th, AND TUESDAY.—5 P.M., Lectures V. and VI.:—Dr. E. Mellanby.
A Course of Eight Lectures on the Bio-Chemistry of Sterols will be given in the Physiological Laboratory of the University, South Kensington, S.W.
TUESDAY, May 18th.—5 P.M., Lecture I., Mr. J. A. Gardner.

UNIVERSITY OF SHEFFIELD—FACULTY OF MEDICINE POST-GRADUATE LECTURES, at the Sheffield Royal Infirmary.
WEDNESDAY, May 19th.—4 P.M., Prof. Connell: Clinical Cases. Abdominal Lesions.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.
TUESDAY, May 18th.—4.30 P.M., Lecture:—Dr. D. E. Core: Hysteria and Certain Indications for its Treatment (continued).

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.
THURSDAY, May 20th.—4.30 P.M., Dr. Gibson: The Modern Treatment of Syphilis. (At Salford Royal Hospital.)

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, London.
Psycho-analysis. By Barbara Low, B.A. Introduction by E. Jones, M.D. Pp. 187. 5s.

AMERICAN MEDICAL ASSOCIATION PRESS, Chicago.
Transactions of the Section on Genito-Urinary Diseases of the A.M.A., June, 1916. Pp. 350.

BAILLIÈRE, TINDALL, AND COX, London.
Aids to Electro-therapeutics. By J. Mangus Redding, F.R.C.S. Pp. 196. 5s.
Practical Tropical Sanitation. A Pocket-book for Sanitary Inspectors in the Tropics. By E. P. Minett, M.D. Pp. 130. 4s. 6d.
The Treatment of Neuroses. By Ernest Jones, M.D. Pp. 233. 10s. 6d.
A Manual of Neurasthenia (Nervous Exhaustion). By I. G. Cobb, M.D. Pp. 366. 12s. 6d.

BRITISH MUSEUM (NATURAL HISTORY), London, S.W.7. B. QUARITCH, DULAP AND CO., London.
Economic Series. The House Fly: Its Life History and Practical Measures for its Suppression. By Major E. E. Austen, D.S.O. Pp. 52. 1s. 6d.

CASSELL AND CO., London.
Diathermy in Medical and Surgical Practice. By Claude Saberton, M.D. Pp. 138. 7s. 6d.

GREEN, W., AND SONS, Edinburgh.
Essentials of Human Physiology. By Professor D. Noël Paton, M.D. 5th ed. Pp. 679. 25s.

HEINEMANN, WILLIAM, London.
The Radiography of the Chest. Vol. I., Pulmonary Tuberculosis. By W. Overend, M.D., B.Sc. Pp. 120. 17s. 6d.

HOLDER, ALFRED, Vienna and Leipzic.
Über Hämophilie beim Weibe. Kritische Studie nebst Erörterung der gynäkologischen Blutungen. Von Prof. Dr. C. Bucura. Pp. 92. M. 11.20.

LAURIE, T. WERNER, London.
Sterile Marriages. By J. Dulberg, M.D. Pp. 264. 6s.
Critical Age of Woman. By Walter M. Gallichan. Pp. 160. 6s.

LIBRAIRIE FELIX ALCAN.
Elements de Radiologie: Diagnostic et Therapeutique par les Rayons X. Par le Docteur Albert-Weil, Chef du Laboratoire d'Electroradiologie de l'Hôpital Trousseau. 2nd ed. Pp. 890. 40 fr.

LONGMANS, GREEN, AND CO., London.
The Principles of Ante-natal and Post-natal Child Physiology, Pure and Applied. By W. M. Feldman, M.B., B.S. Lond. Pp. 694. 30s.

MACMILLAN COMPANY, New York and London.
Common Diseases of the Skin, with Notes on Diagnosis and Treatment. By G. G. Campbell, M.D., C.M. Pp. 229. 21s.
Organisation of Public Health Nursing. By Annie M. Brainard. Pp. 144. 7s. 6d.

MASSON ET CIE, Paris.
Les Infections gangréneuses des membres consécutives aux blessures de guerre. Par G. Lardennois, chirurgien des hôpitaux, et J. Baumel, chef de clinique. Pp. 248. 12 fr.
Le Sympathique et les Systèmes associés, Anatomie clinique, sémiologie et pathologie générale du système, neuro-glandulaire de la vie organique. Par A. C. Guillaume. Préface du Professeur Pierre Marie. Pp. 160. 6.50 fr.
Traité de l'Immunité dans les maladies Infectieuses. Par le Dr. Jules Bordet, Directeur de l'Institut Pasteur de Bruxelles et professeur de l'Université. Pp. 720. 40 fr.
Travaux Neurologiques de guerre. Par Georges Guillain, professeur agrégé à la Faculté de Médecine de Paris, et J. A. Barré, professeur de Neurologie à la Faculté de Médecine de Strasbourg. Préface du Professeur Pierre Marie. Pp. 462. 18 fr.

MURRAY, JOHN, London.
A Lord Mayor's Diary, 1906–7. By William Purdie Treloar. To which is added the official diary of Micajah Perry, Lord Mayor, 1738–9. Pp. 260. 10s. 6d.
Microscopy: The Construction Theory and Use of the Microscope. By Edmund J. Spitta, L.R.C.P. Lond., &c., F.R.M.S. 3rd ed. Pp. 534 and plates. 25s.

SAUNDERS, W. B., COMPANY, LTD., London and Philadelphia.
Surgical Treatment. By J. P. Warbasse, M.D. Vols. II. and III. and index. Pp. 829, 861, and 123 respectively.

WRIGHT, J., AND SONS, Bristol.
The New Physiology in Surgical and General Practice. By A. Rendle Short, M.D. 4th ed. Pp. 291. 9s. 6d.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CANE, L. B., M.D. Cantab., B.C., has been appointed Honorary Physician to Peterborough Infirmary.

DOBBYN, M. G., F.R.C.S., L.R.C.P. Irel., Honorary Surgeon to the Bristol Eye Dispensary.

HARRIES, E. H. R., M.D. State Med. Lond., D.P.H., Medical Superintendent of the Birmingham City Hospital, Little Bromwich.

HUNT, E. R., M.D., B.C. Cantab., M.R.C.P. Lond., Honorary Assistant Physician to the Royal Sussex County Hospital.

LEITCH, J. N., M.B., B.S. Lond., M.R.C.S., L.R.C.P., Medical Officer in charge Electrical Department, Queen Mary's Hospital for Children (M.A.B.), Carshalton, Surrey, and Clinical Assistant Electrical Department, St. Bartholomew's Hospital.

ORMEROD, H. L., M.D., B.Ch., B.A.O. R.U.Irel., Honorary Surgeon to the Bristol Eye Dispensary.

PARSONS-SMITH, B., M.D., M.R.C.P., Assistant Physician to the National Hospital for Diseases of the Heart.

PRICE, F. W., M.D., F.R.S. Edin., Physician to the National Hospital for Diseases of the Heart.

STUTTAFORD, F. H., M.R.C.S., L.R.C.P. Lond., to be Certifying Surgeon under the Factory and Workshop Acts for Markfield.

St. Thomas's Hospital: BILLINGTON, C. M., M.B., B.Ch. Cantab., HALE, J., M.R.C.S., L.R.C.P. Lond., SPENCE, D. B., M.R.C.S., L.R.C.P. Lond., WOOD, F. G., M.R.C.S., L.R.C.P. Lond., CHURCHER, D. G., M.R.C.S., L.R.C.P. Lond., HUMPHREYS, R. M., M.B., B.Ch. Oxon., WHITCOMBE, R. C. P., M.R.C.S., L.R.C.P. Lond., WOOLRICH, W. G., M.R.C.S., L.R.C.P., Casualty Officers and Resident Anæsthetists: DAWSON, W. S., M.B., B.Ch. Oxon., BRETT, P. C., M.R.C.S., L.R.C.P. Lond., WARE, S. A. T., M.R.C.S., L.R.C.P. Lond., YOUNG, M. L., M.B., B.Ch. Cantab., Resident House Physicians; SMITH, J. FOREST, M.R.C.S., L.R.C.P. Lond., Resident House Physician for Children; ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., SMART, A. H. J., B.A., M.B., B.Ch. Cantab., PERKINS, G., M.C., M.B., B.Ch. Oxon., BROCKMAN, E. P., M.R.C.S., L.R.C.P. Lond., Resident House Surgeons; MARRINER, H. L., M.R.C.S., L.R.C.P. Lond, Resident House Surgeon for Ear, Nose and Throat; HIGGINS, L. G., M.B. Cantab., House Surgeon to Block 8; GARSON, H. L., O.B.E., M.C., M.R.C.S., L.R.C.P., Lond., COOKE, R. C., D.S.O., M.C., M.R.C.S., L.R.C.P. Lond., Obstetric House Physicians; CARDELL, J. D. M., M.R.C.S., L.R.C.P. Lond., HOLMES, H. W. H., M.R.C.S., L.R.C.P. Lond., Ophthalmic House Surgeons. Clinical Assistants: CAVENAGH, J. B., M.C., M.B., B.Ch. Oxon., BYRNE, C. H. C., M.B., B.S. Lond., Throat; LOW, W. A., M.C., M.R.C.S., L.R.C.P. Lond., HALLIWELL, A. C., M.R.C.S., L.R.C.P. Lond., Skin; CAVENAGH, J. B., M.C., M.B., B.Ch. Oxon., BYRNE, C. H. C., M.B., B.S. Lond., Ear; LOW, W. A., M.C., M.R.C.S., L.R.C.P. Lond., Children's Medical; SPEAR, F. G., B.A. Cantab., M.R.C.S., L.R.C.P. Lond., LE MARQUAND, H. S., M.R.C.S., L.R.C.P. Lond., CARTER, E. E., M.R.C.S., L.R.C.P. Lond., Electrical and X ray Dept.; HOBBS, F. B., M.R.C.S., L.R.C.P. Lond., GOSSETT, A. C. V., M.R.C.S., L.R.C.P. Lond., Tuberculosis Dept.

Vacancies.

For further information refer to the advertisement columns.

Bethlem Royal Hospital, Lambeth-road, S.E.—Senior Asst. P. £600.
Birkenhead Borough Hospital.—Jun. H.S. £200.
Birmingham and Midland Hospital for Skin and Urinary Diseases, John Bright-street.—Hon. Asst. S.
Birmingham General Hospital.—H.S. £100.
Birmingham, West Heath Sanatorium.—Med. Supt. £600.
Birmingham, Yardley-road Sanatorium and Anti-tuberculosis Centre.—Second and Third Asst. Res. M.O.'s. £450 and £400.
Bradford Children's Hospital.—H.S. £180.
Bradford Royal Infirmary.—H.S. £200.
Bury County Borough.—Asst. M.O.H., &c. £600.
Canterbury, Kent and Canterbury Hospital.—Two Res. M.O.'s. £200 and £150.
Chester Royal Infirmary.—H.S. and Asst. H.S. £200 and £150.
City of London Hospital for Diseases of the Chest, Victoria Park, E.—H.P. £100.
Colchester, Royal Eastern Counties' Institution for Idiots, Imbeciles, and the Feeble-Minded.—M.O. £300.
Colchester, Severalls Mental Hospital.—Fourth Asst. M.O. £510.
Derby County Borough.—Asst. Tuberc. O. £500.
Doncaster Royal Infirmary and Dispensary.—Asst. H.S. £225.
Dorset County Council.—Asst. County M.O. £500.
Egyptian Government School of Medicine.—Med. Registrar. L.E. 600.
Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Female Clin. Assts.
Enham Village Centre for Disabled Ex-Service Men, near Andover, Hants.—Asst. Med. Direct. £500.
Freemasons Hospital and Nursing Home, 237, Fulham-road, S.W.—Res. M.O. £250.
Galway, University College.—Professorships of Anat. and Phys.
Guildford, Royal Surrey County Hospital.—Third H.S. £150.
Halifax Royal Infirmary.—H.S. £200.
Hindley Urban District Council.—M.O.H. and School M.O. £850.
Holborn Union Infirmary, Archway-road, N.—Sec. Asst. M.O. £300.
Hospital for Women, Soho-square, W.—Clin. Assts.
Hull Royal Infirmary.—Senr. H.S. £200. Asst. H.S. £150. Asst. V.D. Officer and Cas. £250.
King's College Hospital, Denmark Hill, S.E.—Bacteriologist.
Kingston, Ont., Queen's University.—Prof. of Clin. Surgery. $5000. Prof. of Path., Prof. of Anat., and Prof. of Pharm. $3500 each. Prof. of Prev. Med. and Pub. Health. $3000. Asst. Prof. of Phys. $2000.
Leamington Spa, Warneford, Leamington, and South Warwickshire General Hospital.—H.P. and H.S. £200 each.
Leeds General Infirmary.—Res. M.O. at Ida and Robert Arthington Hospitals. £60.
Leeds Public Dispensary.—Res. M.O. £200.
Leicester City Education Committee.—Female Asst. Sch. M.O. £500.
Liverpool, Stanley Hospital.—H.S.'s. £150.
Maidstone, Kent County Ophthalmic Hospital.—H.S. £250.
Manchester, Ancoats Hospital.—Hon. Con. Oph. S. and Hon. P.
Manchester Children's Hospital, Gartside-street, Manchester.—Asst. M.O. £200.
Manchester Ear Hospital.—Hon. Asst. S.
Margaret-street Hospital for Consumption, 26, Margaret-street, W.—Pathologist. £50.
Metropolitan Asylums Board, Infectious Hospitals Service.—Jun. Asst. M.O.'s. £515 6s.

Middlesbrough, North Ormesby Hospital.—Asst. H.S. £200.
Middlesbrough, North Riding Infirmary.—Hon. S.
Middlesex County Council.—Female Asst. M.O. £500.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Hon. Asst. Ophth. S.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Hon. Gynæcologist.
Newcastle-upon-Tyne City and County.—Maternity and Child Welfare M.O. £700.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Two Temp. Hon. Asst. S.
Northampton General Hospital.—H.P. and H.S. £200 each.
Norwich, Norfolk and Norwich Hospital.—H.P. and Two H.S.'s. £200.
Nottingham General Hospital.—H.P. Also Cas. H.S. £200 each.
Portsmouth Royal Hospital.—H.S. £150.
Preston and County of Lancaster Royal Infirmary.—H.S. £180.
Queen Charlotte's Lying-in Hospital, Marylebone-road, N.W.—Asst. Res. M.O. £50.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Hon. Anæsth. £25. Also H.S. £100.
Rotherham Hospital.—Jun. H.S. £150.
Royal Chest Hospital, City-road, E.C.—H.P. £120.
Royal College of Surgeons of England.—Hunterian Professor and Arris and Gale Lecturer.
Royal Dental Hospital and London School of Dental Surgery, Leicester-square, W.C.—Lect. on Bacteriology.
Royal National Mission to Deep Sea Fishermen, Bridge House, 181, Queen Victoria-street, London, E.C.—Medical Missionary.
St. Leonard's Hospital, 204, Hoxton-street, N.—Two Res. Asst. M.O.'s. £400 and £350 respectively.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Jun. H.S. £75.
Seamen's Hospital Society, Hospital for Tropical Diseases, Endsleigh-gardens, N.W.—H.P. £100.
Sheffield Royal Hospital.—Cas. O. and Asst. Cas. O. £150 each.
Sheffield Royal Infirmary.—H.P. and H.S. £150 each.
Southern Rhodesia.—Med. Inspector of Schools. £866.
South London Hospital for Women, South Side, Clapham Common, S.W.—Female Asst. Path. £150.
Stamford, Rutland, and General Infirmary, Stamford.—H.S. £200.
Stroud General Hospital.—H.S. £200.
Swansea County Borough.—Asst. M.O. £500.
University College Hospital, Gower-street, W.C.—Second Clin. Asst.
Walsall General Hospital.—Female H.S. and Anæsth. £175.
Warwickshire County Council.—Assistant County M.O.H. £500. Female Asst. County M.O.H. £500.
Weir Hospital, Grove-road, Balham, S.W.—Res. M.O. £150.
West Bromwich and District Hospital.—Res. H.S. £200.
West London Hospital, Hammersmith, W.—Surg. Dent.
West Riding County Council.—Asst. County M.O. £650. Two Sch. Med. Inspec. £500.
Wigan Infirmary.—Senior H.S. £250.
Winchester, Royal Hants County Hospital.—H.S. £250.
Worthing, West Sussex and Chichester Joint Education Committee.—Asst. Sch. M.O. £500.

The Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Blackford, Campbeltown, and Gravesend.

Births, Marriages, and Deaths.

BIRTHS.

BARNES.—On May 3rd, at Wiltshire House, Wiltshire-road, S.W., the wife of Howell Wood Barnes, B.A., M.B., B.C. Cantab., D.P.H. Cantab., of a daughter.

BEAUMONT.—On April 28th, at a nursing home, to Norah (née Hamill), the wife of Dr. G. E. Beaumont—a daughter.

BIDWELL.—On May 6th, at Woodchurch, near Ashford, Kent, the wife of Surgeon Commander Lawrence Bidwell, R.N. (retired), of a son.

CHALLENOR.—On May 7th, at The Mount, Rhos-on-Sea, N. Wales, the wife of Major L. T. Challenor, R.A.M.C. T.F., of a daughter.

CROSBIE.—On May 3rd, 1920, the wife of Douglas E. Crosbie, M.D., M.C., Clarendon-terrace, Londonderry, of a daughter.

MENZIES.—On May 10th, at Egerton-gardens, the wife of Dr. F. N. Kay Menzies, of a son.

SEYMOUR-PRICE.—On May 9th, at Sloane-gardens, S.W., the wife of Dr. P. Seymour-Price, of a son.

TRETHOWAN.—On May 9th, at St. Thomas's-street, S.E., the wife of W. H. Trethowan, F.R.C.S., of a son (John Durham).

THOMPSON.—On May 4th, at Priory-mansions, Drayton-gardens, the wife of Major W. I. Thompson, D.S.O., R.A.M.C., of a daughter.

MARRIAGES.

BISHOP—SCARBOROUGH.—At Sheffield, on May 12th, Major Raymond S. Bishop, M.C., late Lincolnshire Regt., to Hilda Mary Scarborough, M.D.

RIDDELL—STEVENS.—On May 5th, at the British Consulate General, Antwerp, and afterwards at the Church of St. Boniface, Antwerp, Daniel Falconer Riddell, M.C., M.B., late Captain, R.A.M.C., to Honor Paynter, eldest daughter of Mr. and Mrs. H. W. Stevens, Antwerp.

SCOTT—KELLS.—On April 29th, at St. James's Church, Piccadilly, W., Evelyn Denis Scott, M.B., M.R.C.P., B.S., to Muriel Evelyn Kells, elder daughter of Mr. and Mrs. John Kells, of Gerrard's Cross, Bucks.

DEATHS.

INGLIS.—On May 10th, at Eversfield-place, St. Leonards-on-Sea, John Inglis, M.A., M.D., aged 59 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL OFFICERS' EMOLUMENTS ON THE RAND.

WRITING on behalf of the East Rand Branch of the South African Medical Association, the secretary of the Association has intimated to the Kleinfontein Group Medical Society that the Association disapproves of the present rates paid by the society to its medical officers. In view of the increased cost of living fair rates are urged. The letter states: "We must therefore ask you to raise the fees paid to at least 4*s.* per head per month for whole-time appointment, or—should you feel that your medical officer can undertake private practice without detriment to your members—3*s.* 6*d.* per head per month. This will bring your society more into line with other societies along the Reef." The letter concludes imperatively: "We feel that one month will give you ample time to make up your minds on the question, and we have therefore decided that Dr. Drever must cease work at the end of April unless our rates are agreed to." In reply, the secretary of the Kleinfontein Group Medical Society states that his committee is of opinion that the demand is unreasonable. "The committee is quite prepared to pay a reasonable increase on the basis of the increased pay that the men themselves have received. They have obtained 40 per cent. on their 1914 rates, and some have received only 20 per cent. The present appointment was advertised in 1913, and there were 30 applications from all parts of the Union and from Rhodesia, and there was one from England. The salary was £1000 per annum in January, 1914. The society granted a motor-car allowance of £100 per annum. In May, 1916, on threat of resignation, the salary was raised to £1500, and the demand now made was equivalent to £2500 per annum, plus private practice, estimated to be worth an additional £500 per annum."

INTRAVENOUS EUSOL IN MALARIA.

Lieutenant-Colonel P. S. Vickerman describes in the *Journal of the R.A.M.C.* for January ten cases of obstinate subtertian malaria treated successfully by intravenous injections of eusol after quinine had ceased to show effect. Forty c.cm. was the usual dose of eusol containing 5 per cent. of hypochlorous acid; the solution must be freshly prepared. Crescents disappeared first, then the other forms. Blood counts, numerical and differential, improved, and a patient with malarial cachexia said he was a new man. If other observers will give this method trial, and find results as hopeful, a great advance in the treatment of malaria will be to the credit of Lieutenant-Colonel Vickerman, whose observations appear to have been made in Egypt.

FOOD SHORTAGE IN SKYE.

THE condition of the people of Skye and the Outer Islands owing to the prevailing food shortage was discussed at a meeting of the Inverness-shire education authority in Inverness on April 29th. Mr. Nicol Martin, of Glendale, read a letter which he had received from a retired teacher on the property of the Board of Agriculture in Skye. The writer stated that last December and January, while influenza was raging, there was not an ounce of food but a few hard biscuits and some potatoes. There was no milk except that of two cows, and this was distributed among the sufferers. Six deaths occurred in that small district, including three school children. Had their systems not been reduced by want of nourishment they might have survived, but they lacked any power of resistance. During the same period the year before the position was as bad. Out of 46 children in school one only had a piece of bread, and in only one house was there a grain of meal. The situation was desperate, and he (the writer) had sent to Portree for ten dozen loaves. This relieved the position, as he was able to distribute 2 lb. of bread to each person in the district. The teacher, who got supplies by post, often had to feed the younger pupils. Some of those children left home at 9 A.M. and returned at 3.30 without having had any food, and with potatoes only awaiting them at home. Several families remained away from school for want of food. Rev. Mr. McLeod, North Uist, corroborated what Mr. Martin had said, and added that the hardship was felt all over the Western Islands. There were many children in Benbecula who had to be kept at home for fear they would faint in the schools. The clerk stated that, in reply to their representations on the subject, an acknowledgment had been received from the Scottish Office, and a letter from the Ministry of Shipping stated that the matter was receiving very close attention, and that they would do all in their power to improve matters in connexion with transport facilities in Skye.

OFFICIAL FOOD ANALYSIS IN VIENNA STOPPED.

WE learn from the *Economic Review* (May 5th) that the food analysis office in Vienna has been closed. The statement is as follows:—

A notice has been posted up at the entrance to the Vienna Institute for Food Analysis announcing that the institute is closed till further notice. As to the reason for the sudden closing of an important public office no explanation from official quarters is yet forthcoming. The director of the institute, Dr. Schattenfroh, stated that he could make no communication, as he considered it a private matter. The public is therefore left to form its own conclusions.

It is said that the costs of working have risen so enormously that the sum allocated in the Budget in quite insufficient. This is specially the case as regards the necessary reagents and chemicals. The costs of food analysis, however, are said to be charged always to the manufacturer or the vendor and covered by an increase in the price. Moreover, there are now very few foodstuffs whose exact analysis is necessary, since the majority of the population in the present scarcity will eat articles which in former times would not only have been rejected by the consumer, but prohibited because of their contents. The trade in food substitutes is so general that it is considered superfluous to investigate whether a certain article contains the alleged ingredients, so long as it is not actually injurious to health. The sphere of activity of the Food Analysing Institute is, therefore, very limited. The Office of Public Hygiene will no doubt reopen the institute as soon as possible. In the meantime the laboratory is available for the Vienna Chemists' Institute. (*Neue Freie Pr.*, Apr.8.m.)

The position must be serious when it is admitted that the trade in food substitutes is so general that it is considered superfluous to investigate whether a certain article contains the alleged ingredients so long as it is not actually injurious to health. It is not clear whether control has ceased also in regard to injurious ingredients. The public health may well suffer under this order.

THE PARAFFIN TREATMENT OF BURNS.

THE paraffin treatment of burns is a great advance, but its technique is being improved, and, in the *Journal of the R.A.M.C.* for February, Lieutenant-Colonel A. J. Hull describes the precise method he, after much experience, has come to consider the best. The résumé which follows is very much in his own words. The burn is washed or painted with 1 per 1000 aqueous flavine solution, followed by the application of No. 7 paraffin. "No. 7" paraffin is thus prepared. Melt 678 g. of paraffinum durum, add 250 g. of vaseline and 50 c.cm. of olive oil, with 2½ g. of β-naphthol (resublimed). Let the temperature of the mixture sink to about 55° C., then add 20 c.cm. of eucalyptus oil; stir and allow to solidify. The burn, which has had an antiseptic solution painted over it as we have said, is dried with gauze or an electric drier. A layer of paraffin is applied at a temperature of 55° or 60° C. A thin layer of wool is placed over the first layer of paraffin, and a second layer of paraffin at the same temperature painted over the wool. A dressing of wool and bandage covers the paraffin dressing which is changed every 24 hours. The paraffin should not be too hot or the layer will be too thin and will not peel off in a sheet. This dressing protects the epithelium and holds the tissues at rest, but if granulations become sluggish a scarlet red paraffin should be substituted ("No. 10" paraffin, which takes more trouble to prepare; see the paper). This treatment obviates pain, sepsis, and other complications, so is generally applicable. No other preparation has given so good results.

HOME HYGIENE.

WITHIN the limits allotted to the little manuals issued by the St. John Ambulance Association for the instruction of their students in health matters Dr. John C. Thresh[1] has contrived to write a valuable and comprehensive book on domestic and personal hygiene. As medical officer of health, and now consulting medical officer for a home county, he has had opportunities of closely studying those conditions, the presence or absence of which determines the health, and therefore the efficiency, of the community. The 13 chapters into which the book is divided embody the substance of six lectures dealing with disease in general, its cause, and prevention, the house and its construction, the hygiene of economy, and the rôle of air, water, food, and clothing. The author points out that it should be the aim of every citizen not only to maintain his health up to normal standard, but to raise the health standard of the race. What is required to strengthen the awakening health conscience of the nation is a right understanding of health and its meaning to the community and a knowledge of what is being done by the State and the medical profession in this direction. Dr. Thresh briefly but clearly brings out these points in his early chapters by reference to health statistics, the work of the medical officer of health, the uses of tuberculosis dispensaries, sanatoriums, school inspection, maternity welfare, and so forth. The chapters on lighting, heating, and ventilation contain useful illustrative diagrams, and in the section on food the reader is properly introduced to the important subject of vitamines. An appendix calls attention to the serious menace to health of venereal disease and to the special centres for treatment now opened up in nearly every county. The book is a thoroughly practical one and should be studied and assimilated by every intelligent adult in the country, and especially by adolescents whose tendencies have not yet hardened into habits.

[1] Domestic and Personal Hygiene, or the Gospel of Cleanliness. By J. C. Thresh, M.D., D.Sc., Consulting Medical Officer of Health to the County of Essex. London: St. John Ambulance Association. 1920. Pp. 266. 2*s.* 6*d.*

ROYAL WEST SUSSEX HOSPITAL.

OWING to many generous subscriptions, donations, and valuable gifts made during the year, coupled with the fact that many of the patients were paid for by the War Pensions Committee or the County Council, the annual report of the Royal West Sussex Hospital at Chichester shows a balance of £35 6*s.* 2*d.* Since donations and gifts could not be depended on, an appeal was made at the annual meeting on April 29th for a steady income from subscriptions. Expenditure had risen from £5000 before the war to £9140. Under the direction of Lady Garland, at that time Mayoress of Chichester, the Alexandra Day Committee had organised a fête in Priory Park, which resulted in a sum of £881 19*s.* for the hospital. A balcony had been named the "Lady Garland Balcony" as a slight acknowledgment of this lady's efforts. During the year £2000 had been received from the British Red Cross Society, and £500 from the Midhurst Farmers' Red Cross Sale Committee. The governors decided that these sums should be utilised in making structural alterations and improvements, and also sanctioned the allocation of a legacy to necessary improvements to the laundry. The innovation of a pound day at this hospital during the year had proved a great success, and the X ray department had been thoroughly reorganised. Dr. E. H. Buckell, who had been succeeded by Dr. H. E. Rutherford as honorary physician, was appointed honorary consulting physician. The hospital dealt with 858 in-patients during the 12 months.

THE centenary of Florence Nightingale's birth was celebrated this week. She was born at the Villa La Columbaia, Florence, on May 12th, 1820.

Communications, Letters, &c., to the Editor have been received from—

A.—Auxiliary Royal Army Medical Corps Fund, Lond., Hon. Sec. of; *Answers*, Lond., Editor of; Messrs. Allen and Hanburys, Lond.

B.—British Orthopædic Association, Lond.; Miss W. F. Buckley, Lond.; Prof. J. M. Beattie, Liverpool; Miss C. M. Beeman, Lond.; Dr. H. Brown, Chislehurst; British Colloids, Ltd., Lond.; Mr. F. J. C. Broome, Harrogate; Sir J. W. Byers, Belfast; Sir J. Bland-Sutton, Lond.

C.—Sir J. Crichton-Browne, Lond.; Chelsea Clinical Society, Sec. of; Central London Throat and Ear Hospital; Mr. F. R. Cave, Bath; Mr. R. Craik, Lond.; Dr. G. J. R. Carruthers, Edinburgh; Mr. H. Carpenter, Desford; Dr. C. Coombs, Bristol.

D.—Mr. M. M. Dow, Falkirk; Dr. O. T. Dinnick, Lond.; Dr. H. H. Dale, Lond.; Dr. P. Delmas, Montpellier; Dr. W. A. Daley, Bootle; Dr. P. J. Delaney, Claremorris; Dr. J. G. Dobson, Cambridge.

E.—Eustace Miles Foods, Ltd., Lond.; Major-Gen. Sir George Evatt, Lond.; Mr. W. McA. Eccles, Lond.; Dr. A. Erdos, Nagyvarad.

F.—Mr. H. Frankling, Harrogate; Dr. W. E. Fothergill, Manchester; Dr. Z. P. Fernandez, Leeds; Food Education Society, Lond.

G.—Dr. H. O. Gunewardene, Lond.; Dr. G. Galli, Rome; Mr. J. A. Gray, Leith.; Dr. R. P. Garrow, Lond.; Great Northern Central Hospital, Lond.

H.—Mr. C. J. Heath, Lond.; Mr. J. T. Henderson, Pietermaritzburg; Dr. C. O. Hawthorne, Lond.; Mrs. Hodgkinson, Warrington; Surg.-Lieut.-Commd. F. G. Hitch, R.N.; Holborn, Medical Officer of Health of; Dr. P. Hamill, Lond.; Mr. B. K. Howat, Middlesbrough.

J.—*Journal of Industrial Welfare*, Lond., Editor of.

K.—Col W. G. King, I.M.S. (retd.), Lond.

L.—Dr. J. D. Leigh, Sunderland; London Chamber of Commerce; London Dermatological Society.

M.—Dr. W. Makeig-Jones, Torquay; Messrs. Mills and Boon, Lond.; Ministry of Health, Lond.; Medico-Psychological Association of Great Britain and Ireland, Lond.; Middle Classes Union, Lond.; Miss H. Masters, Lond.; Mr. W. Melland, Manchester; Medical Research Council, Lond.; Mr. R. MacIntyre, Lond.

O.—Ophthalmological Society of the United Kingdom, Lond., Hon. Sec. of.

P.—Mr. H. J. Paterson, Lond.; Major F. J. W. Porter, Bombay; Dr. G. L. K. Pringle, Harrogate; Dr. R. H. Paramore, Rugby; Col. J. J. Pratt, I.M.S. (retd.), Lond.; People's League of Health, Lond.

R.—Royal Society, Lond., President and Council of; Royal Institute of Public Health, Lond., Sec. of; Royal Society of Arts, Lond.

S.—Society of Medical Officers of Health, Lond., Executive Sec. of; Society of Superintendents of Tuberculosis Institutions, Sutton, Surrey; Society for the Prevention of Venereal Disease, Lond.; Society of Apothecaries of London, Sec. of; Scottish Board of Health; Save the Children Fund, Lond.

T.—Dr. T. Thompson, Lond.; Dr. W. E. Tinley, Sandsend.

W.—Dr. W. B. Watson, Harrogate; Dr. A. J. Whiting, Lond.; Dr. L. Williams, Lond.; Dr. C. Westman, Lond.; Dr. A. M. Webber, Nottingham; Mr. H. Warner, Fakenham; Mr. R. Warren, Lond.

Communications relating to the editorial business should be addressed exclusively to the Editor of THE LANCET, 423 Strand, London, W.C. 2.